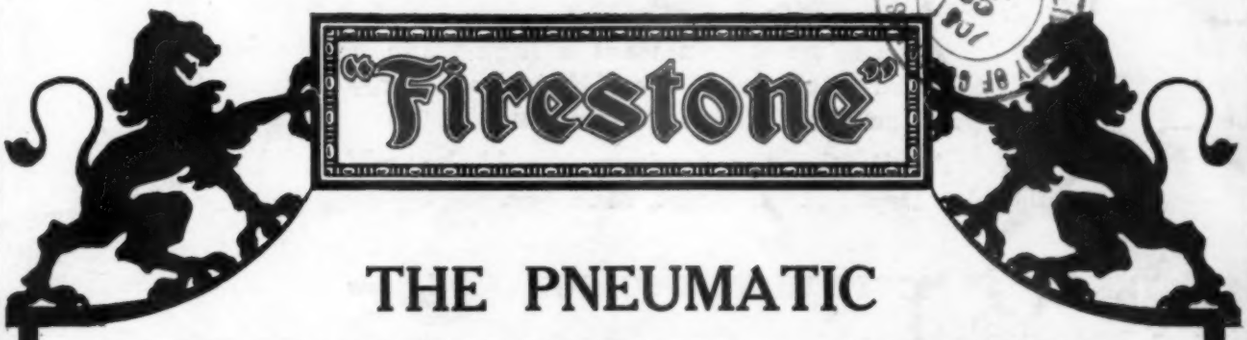
THE AUTOMOBILE

WEEKLY — NEW YORK—THURSDAY, MAY 23, 1907—CHICAGO — 10 CENTS



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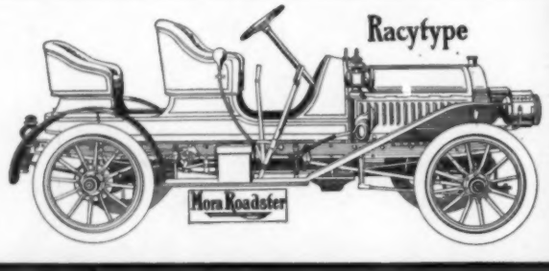
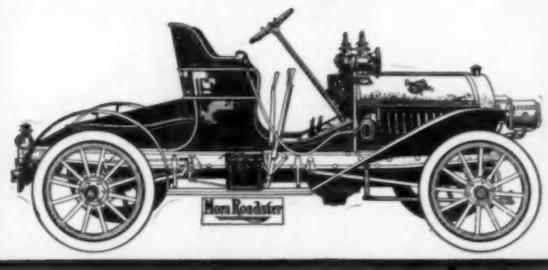


MORA MAKES GOOD



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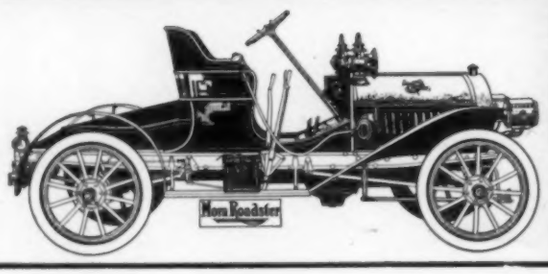

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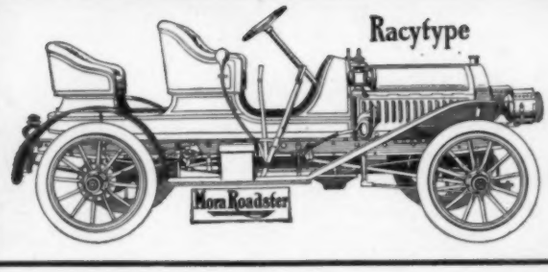

VOL. XVI. NEW YORK—THURSDAY, MAY 23, 1907—CHICAGO No. 21

THE AUTOMOBILE

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A LITTLE TOUR IN NORMANDY

PREAMBLE.

"LE CIRCUIT," how to get there, and how to get away again, has been the problem with enthusiastic autoists in France ever since great "events" were inaugurated.

There is absolutely no question but that the Circuit de Normandie, the venu of the French Grand Prix for 1907, is the most accessible—to automobilists—ever known. Practically it is within easy distance of Paris, for what is the 180 kilometers from Paris to Dieppe once one is free of the dozen or twenty execrable suburban pavé via St. Germain or Pontoise. It's bad enough either way; whichever route one takes, he wishes he had been wise enough to take the other.

Besides this the "triangle is within a half hour's or hour's journey by road of a dozen small and large provincial towns and cities where may be found all the accommodation that man and his modern beast of burden, the automobile, require. To be sure, one does not get *vin compris* at the tables d'hote of the inns of the small towns very often; it is the *pays du cidre,* Normandy, and the great yellow globes or carafes of cider are quite as refreshing on a hot summer's day as wine; and *Calvados*—which is a Frenchman's way of naming "apple-jack"—is quite as fortifying as *cognac* itself.

The accompanying sketch map and tables tell the story of accessibility and accommodation better than mere rhetoric, and so they are allowed to stand for themselves

Rouen, Le Havre, or Dieppe are the nearest at hand, but, of course, for the great event they will be overrun for days by all sorts and conditions of men and automobiles. This, perhaps, will also be true of Fécamp, Yvetot, and Tréport, but the reverse is likely to be true of Abbeville, 30 kilometers from the northeasterly corner of the course; and Les Andelys, Gournay, or Gisors, between Rouen and Paris; or Honfleur, Louviers, or Pont de l'Arch, all of them but from 50 to a 100 kilometers away from the scene of the race.

Coming from abroad via Dieppe, Cherbourg, Le Havre, or Boulogne, the course is readily arrived at by the roads as marked, and there is much evidence to suppose that a larger number of Americans than ever before will be present at the great French race, especially with the indomitable and persistent Christie numbered among the participants. Governmental, departmental and municipal appropriations have been made with a free hand towards the re-making of the roadway, straightening of bad curves, and even of cutting down dangerous abutting trees. Grandstand accommodations of a superior and exceedingly luxurious order have been planned, restaurants and cafés projected, and telegraphic and post-office facilities promise something phenomenal.

Enthusiasm—and the French are extravagantly enthusiastic, as we who know them best must admit—may exaggerate somewhat, but the fact is the course is admirably placed and in point of fact the best France has ever had, midway between the "Circuit d'Auvergne," which was too mountainous, and the "Circuit de la Sarthe,' which was too monotonously flat.

AT THE TRAPPIST MONASTERY.

HOW TO TOUR NORMANDY.

Normany, Brittany, and Touraine are the ideal automobile touring grounds in France, if not in all the world. The stranger automobilist usually arrives in France via Cherbourg, Le Havre, Dieppe, or Boulogne. In either case he "tumbles" immediately into Normandy, as the French say. Most likely he makes wheel tracks for Paris at once, though he makes a mistake when he does it. Anyway, the round of Norman towns, as one approaches the southern boundary, comes very near to Paris, so the present itinerary takes the gay capital as the starting point. The way out from Paris, via the Route de

Quarante Sous and Mantes, is through St. Germain. It's a shockingly bad bit of roadway all the way to St. Germain, 20 kilometers and mostly *pavé*, but it's unavoidable unless one goes via St. Denis and Pontoise, and then it is 25 kilometers and *all pavé*, and after Pontoise a long stretch of still worse cobblestones. The road by St. Germain and Mantes is by far the better.

St. Germain is lovely, its château, its terrace, and its Forêt, but the town is a dirty hole, difficult to navigate with an automobile and possessed of a pirate crew of octroi officials who stop you at the barrier and would look for smuggled spirits into the barrel of your tire pump, if the idea only occurred to them.

Up and down hill and dale, with delightful prospects of the Seine Valley on the right, the great Route Nationale, No. 190—*Paris-Rouen-Le Havre*—runs for 30 kilometers to Mantes. Mantes has the votive church of Notre Dame, built, or endowed, by William the Conqueror. Practically it is a copy, as to its façade, of Notre Dame at Paris. This is all Mantes has to offer as a "sight" save the river and its bridges, and its hotels are abominable for a French town of its size. So, too, they are at Vernon, 25 kilometers further on. Don't think of stopping for lunch short of Les Andelys or Pont de l'Arch.

A French Town which Has an Auto Trap.

Between Mantes and Vernon is Rosny, with the natal château of Sully, the minister of Henri Quatre, and a little known painting by Corot in the parish church. Nearby is Moisson, and it will be an off-day if a Lebaudy "airship" isn't having a try-out in the heavens above. It is worth looking out for.

Beware of Bonnières, a half dozen kilometers further on. The *maire* has posted a notice at each end of the village cutting down the speed limit to six kilometers an hour — (figure that out in miles, say three and a half, and just think what that means when, "all out," you can do an average forty). Many an automobilist, French and stranger alike, has paid the penalty here for non-observation of this warning.

Vernon is a delightfully situated Seine-side town, and turning to the left, up the hill and through the Forêt de Bizy, is a detour of fifty or sixty miles, including Pacy-sur-Eure, Evreux, and its cathedral, and Conches, each and all of them typical Norman towns. If this detour is made, lunch either at Pacy-sur-Eure, Hotel de Lion d'Or, or at Conches at the Croix Blanche. At either you eat of the best of the Norman countryside, good beef, mutton and vegetables, and never *jambon aux œufs*, with which the hotels of the big towns regale Anglo-Saxons as a *plat special*. Curious that they size up the appetites of the English-speaking traveler as based only on *ham* or *bifteck*.

Then there are the cheeses in Normandy, too many in kind to enumerate, but always le Camembert, and sometimes Pont Salut, the best cheese in France, save, perhaps, the *"fromage bleu"* of Rochefort, too strong for some.

From Vernon the road by the Seine, still Route Nationale No. 190, goes straight on for 14 kilometers to the famous Côte de Gaillon, the scene of a yearly "hill climb" famous in the annals of automobilism since long years.

Une Colonie Americaine.

From Gaillon, or from Vernon if you like, cross the Seine to the right bank. Opposite Vernon is Giverny—*une colonie Americaine*, the habitant calls it, for there are anywhere from a dozen to fifty Americans there the year round, mostly artists. Years ago Madame Bodet, who ran a little grocer's shop, took a couple of American artist fellows to board—for a price so ridiculously low that one dares not mention it now—and in time a hotel grew up with an added wing every year, until to-day one may find two score of men and women—always Americans, or if not always nearly always—all painting away as if Giverny and its surroundings were the only paintable spots in France. Madame Bodet, the elder, has retired into the background and a young Madame Bodet, the wife of Gaston, who comes from Paris, has taken her place. All is lovely as of yore, but prices have gone up at the Hotel Bodet.

Down river twenty kilometers, always by that same delightful Route Départementale, is Petit Andelys, snug lying beneath the famous Château Gaillard, Richard Cœur de Lion's "Saucy Castle," built, so says tradition, in a year. The ruin of the once proud old castle is still there, on a monticule rising 300 feet or more from the river's edge. On the waterside is the Hotel Bellevue, the most delightfully situated and altogether most charming hotel between Paris and the sea. It has an inner courtyard, vine-covered and tree-shaded, and when a half dozen automobiles and their attendant paraphernalia don't fill it to suffocation one dines out in the open under the trees, and after strolls on the river bank or up to the château in the moonlight and thinks nothing were quite so idyllic in these rush-about twentieth century days.

The Hotel Bellevue is very, very good, indeed, but it is the ensemble that makes it so. The proud old aristocratic patron, Thiriet, has his own notions about what you ought to eat and how it ought to be cooked, and you eat it that way or not at all, but it's thoroughly good in quality and bountiful in quantity, and there is no *garlic* in it. You drink cider, of course, and not wine, but the *patron* makes it himself, not by squeezing the apples in a press—that's the common peasant's way, he tells you—but by simply crushing them and pouring tepid water over them and letting it run off into barrels. Eight days after it's ready to drink. Simple, isn't it!

As to who discovered Petit Andelys and Château Gaillard is in doubt. Sir Walter Scott knew it and Cotman and Turner painted it, and a dozen or fifteen years ago a yachting, coaching (and in these days automobiling) millionaire (for he is still faithful to Les Andelys and Thiriet, and turns up regularly at least once a year) came along and gave it the cachet of his favor and did some booming of it in a mild way among his friends, and so established the town as a place out of the ordinary and easily the finest place on the Seine.

Between Les Andelys and Rouen is Pont de l'Arch with a good hotel, too (Normandie), and twenty kilometers to the west

is Louviers, with the most wonderfully flamboyant Gothic church extant and a good hotel, the Mouton d'Argent.

Where to Dine in Rouen.

Rouen, of Jeanne d'Arc and Cathedral fame, is seventeen kilometers from Pont de l'Arch by the river road all the way. Rouen shall have no guide-book information here; just a few words about hotels and things. There's anything one likes at Rouen in the hotel line, and in the garage line, too. The Hotel d'Angleterre on the quai, or the Hotel de la Poste on the Rue Jeanne d'Arc, are excellent establishments of the first order, with prices accordingly, but much cheaper, of course, than American prices for the same sort of thing.

For a novelty the Hotel Lisieux, on a back street running parallel with the quai, just off the Rue de la Republique, is to be recommended. There's nothing quite like it in all France. It's *bourgeois*, excruciatingly so, but its fare is marvellous in excellence and variety. Never has the writer seen a lay-out quite like it, and *vin* is *compris*, red or white *vin d'Algerie*, not one of the world's great *crus*, but a most pleasant drink. The déjeuner or dinner is all one's fancy will picture it, but the dessert, the sweets, the cheeses (eight or ten of these last) and the fruits will seem a dream. Go to Rouen and cut out the churches if you will, but don't miss the Hotel Lisieux. You will have to garage your machine at Adrien Menager's, near by, and that will cost you a franc, whereas otherwise you might get it sheltered free—but that's a mere nothing.

From Rouen to Caudebec-en-Caux is 35 kilometers, via Jumièges and Duclair. Jumièges is a grim, old ruined Norman abbey which, seen by moonlight, awakens the same emotions as those claimed for the Coliseum and Melrose. Duclair is a market town and not much more. Caudebec, 15 kilometers further on, should be included in every Norman itinerary, particularly if the *"mascaret"* is on. The *"mascaret"* is a great incoming wall of water which rushes up the Seine at certain seasons of the year at an alarming rate. It is a veritable whirlpool and a sight worth coming miles to see, but it's all over in a minute.

Dieppe Has Many Attractions.

Dieppe and its attractions are known to all. At Puys, on the cliff just eastward of Dieppe, may be seen the house where Dumas *père* lived and died. At the easterly end is Eu and its now ruined château, and Tréport, the Parisian watering place—not fashionable, but the *vogue*, nevertheless.

Fécamp to the westward, but still 40 kilometers from Havre, has a history and an industry. The industry, or more correctly the produce of the industry, is better known than the history; the "Benedictine Brewery," as a German contemptuously referred to it in one of those brief intervals when Germans travel in France, is one of the "sights" of the town, and a very interesting sight it is. You get a free drink besides. *Verb sap*!

CHAMBRE N°

Prix (lavées et éclairage compris) { P^r 1 personne.. / P^r 2 personnes.

REPAS

Petit déjeuner (dans l'appartement).. / (dans la salle à manger)

Déjeuner à la fourch^te { id. }

Dîner { id. }

DIVERS

Pension d'un domestique (lgt et nourr^re)

Chauffage { Panier de bois / Sous de charbon

Bain de pieds

— de siège

Grand bain

Omnibus (pour la gare, par personne),

MM. les Voyageurs sont priés de vouloir bien déposer leurs valeurs au bureau de l'hôtel.

"WHAT YOU HAVE TO PAY."

Étretat and its *falaises* are known to all who remember or have ever seen the "Table Books of Art" of a half century ago. Étretat was the chief artists' sketching ground in France after Barbizon, in the days of Louis Philippe. Étretat's vogue has passed and the automobilist rushes in and out like a glance of the eye and goes to St. Jouin for déjeuner—if he knows his business. St. Jouin has got the real thing in the way of a hotel, the Hotel de Paris, *"conducted,"* as one learns formally, by Madame Ernestine Aubourg. In the days of Dumas Père, when the inn was already famous, she was simply "La Belle Ernestine" and M. Aubourg had not then appeared on the scene. Dumas described *"La Belle Ernestine"* in 1865.

THE FINEST TOWN IN NORMANDY: PETIT ANDELYS.

How One Crosses the Seine.

To pass the Seine one has to double back from Le Havre to Lillebonne, 35 kilometers, via Harfleur and Tancarville, keeping always by the river road and not going by the island route via Bolbac, as most do. One crosses the Seine by an antediluvian *bac à vapeur* from Lillebonne to Quillebeuf, at a cost of from one to two francs, *"according to the force of the motor."* From Quillebeuf via a by-road one arrives, in a dozen kilometers, at Pont Audemer, an unconvincing, small, smug town of Normandy, whose principal *"affaires"* are those of the litigation courts.

It is a main road from Pont Audemer to Trouville, 38 kilometers via Honfleur, one of the most delightfully quaint old Norman seacoast towns existing. Trouville is the gayest, most sporty, of all the northern French *plages*. Honfleur is its antithesis. There is an admirable *corniche* route from Honfleur to Trouville, 14 kilometers along the edge of the cliff, a reminder of the Mediterranean *corniches*.

Trouville—*un petit Paris au bord de la Mer*. You get anything you like here, *and are willing to pay for*, at the three-starred Hotel des Roches Noires or the Hotel de Paris. Lunch at either, if you will, on a terrace overlooking the sea, and stroll about the promenades after, but dine and sleep at Pont l'Eveque, 10 kilometers inland, and see what a real French country hotel is like. Pont l'Eveque is as prominent a center for the cheese and butter trade as one finds in Normandy, and there will be a supreme satisfaction in seeing the untrammeled life of the people as contrasted with the affectations of Trouville-Deauville.

If the above proposition is not wholly agreeable, and you are going to make the Norman round as quickly as possible, you make your stopping place for the night at the Hostellerie Guillaume le Conquerant, at Dives-sur-Mer, 20 kilometers west of Trouville. The hotel is a curiosity—a musée, if you will—such as you will not find in all France. It is got up for show and is nothing indeed but a "sight," though the fare is good and the price is low, not over nine francs a day. It was from the port of Dives that William the Conqueror set sail in 1066 to revolutionize the manner of life in England—and he did it.

Mont St. Michel is the end of every Breton and Norman pilgrimage. It really belongs to Normandy, though practically it is on the boundary between the two ancient provinces. It's delightful to pass the night on the water-surrounded isle, to wake with the sun and imagine what it must once have been when the

monks of the old abbey were in "peril of the sea," but the automobilist finds scant accommodation here.

The distance from Coutances to Mont St. Michel, via Granville and Avranches, is 87 kilometers. From Mont St. Michel to Mortain, 48 kilometers, or to Domfront 74. Three to five days have been spent en route up to now. One might as well thread the highways as well as the byways, and spend a month in Normandy, but most automobilists will not see it that way.

Back to Paris Through Touraine.

The itinerary can well be combined with that of Brittany by keeping on westward from Mont St. Michel and so on back to Paris through the châteaux country of Touraine, but if one turns Parisward again at Mont St. Michel he will want to spend at least two days more en route.

Argentan, Alençon and Mortagne (not Mortain this time) should be visited and *déjeuner* taken at the monastery of La Trappe, near Mortagne. If it's a stag party, one may dine simply in the refectory of the monastery itself, leaving the automobile outside in charge of a brown-robed, gray-bearded brother, whose usual occupation is minding his *très belles vaches,* or watching the bees going and coming from their hives—cheese and honey are the two great specialties of La Trappe-Soligny.

The route from Argentan or Mortagne to Paris via Laigle, Verneuil and Dreux is approximately 156 kilometers, an easy day's run, allowing a stop for lunch at Dreux (Hotel de France).

This return itinerary through Normandy comprises quite a different topographic ensemble from that out by the Seine Valley and the coast road. The soil is more rolling and, taken all in all, is a hilly stretch; nothing hard, and the surfaces always well kept, but with a typical French countryside character to it.

One might vary the return from Mortagne by entering Paris via Chartres, Maintenon and Rambouillet. Chartres and its cathedral, its excellent "commercial" hotel, the Duc de Chartres, and its altogether delightful surroundings should be omitted from no automobile itinerary which comprehends Normandy, Brittany or Touraine. It can be readily combined with each.

In the Country of the Vine.

It is 18 kilometers from Chartres to Maintenon—and here, by the way, one is in the *pays du vin;* wine takes the place of cider at table d'hote simply because it is a vine-growing country instead of an apple-growing one. Maintenon is a pompous little town of 1,400 inhabitants, and is marked in the French road books with a miniature locomotive, sealed letter and a telegraph pole, indicating that it is a railway station, a post-office and a telegraph office. One of these excellent French road books, the Guide-Michelin, goes so far as to give a miniature reproduction of a red cross flag, indicating that the badly injured may be properly taken care of by local aid. Automobilists don't get so seriously injured in these days as they did at first, and they don't so often injure others, but all the same it's good information to give in a guide book, and in this respect the French lead the world—even the indefatigable Germans. Maintenon's interest for the traveler is in its associations of the widow Scarron, who, as the Marquise de Maintenon, married Louis XIV in 1684. Louis XV came along in turn and built a château for "La Pompadour" here, but it has disappeared to-day.

Maintenon to Rambouillet is 22 kilometers, and three kilometers of it through the town are as bad an example of *pavé* as one meets in a thousand kilometers of French travel. Here is the state château de Rambouillet. It was acquired for the crown by Louis XVI in 1665 and is still occupied for the hunting by the *bons bourgeois,* the presidents of the present republic.

The roads through the Forêt are excellent and a charming detour of a dozen kilometers can be made. Paris is entered in either case through Versailles, but if one is going north again within a reasonable time, or even down into the Fontainebleu region he can find admirable garage accommodation at Versailles and save a dozen or twenty miles of nerve-racking automobiling each way to and from the center of Paris.

Auto Organizations After the Hotels.

The Touring Club de France, and the Automobile Club de France are doing their utmost to brace up provincial hotels, and in Normandy the seed of their efforts is taking root. *"W. C.'s perfectionnés"* are springing up like mushrooms where a *lieux* only formerly existed. The sleeping rooms, too, are being refitted on the *"hygiénique"* plan here and there, and you know what you are paying for each separate thing from the posted notices.

The road signs, the *"poteaux indicateurs,"* throughout Normandy are excellent and may be read whilst moving at a swift pace. This the automobilist will like, though the propriety may be doubtful. Coming out from Paris, and indeed on all the main roads, the signs are particularly legible. They give first the name of the Route Nationale, as—Paris-Le Havre—with the distance from Paris and the distance to Le Havre. Then the distance *to* the next nearest town in either direction. No elaborate formula or hieroglyphics to remember *or forget.* The road signs of France are a blessing.

Essence and *huile,* which is the Frenchman's way of naming gasoline and oil, are obtainable everywhere, the former selling for two francs to two francs fifty for five liters, something over a gallon; more expensive than in America, of course, but a small factor when touring. Each is obtainable everywhere.

Itinerary

Place.	Kilometers.	Hotel.
Paris	00	
St. Germain	19	
Mantes	40	
Rosny	6	
Rolleboise	3	
Bonnières	4	
Vernon	7	
Pacy-sur-Eure	14	Hotel Lion d' Or.
Evreux	17	
Conches	18	Croix Blanche.
Gaillon	14	
Giverny	4	Bodet.
Les Andelys	24	Bellevue.
Louviers	22	Mouton d'Argent.
Pont de l'Arch	11	Normandie.
Rouen	14	Lisieux, d'Angleterre.
Caudebec-en-Caux	35	du Havre.
via Duclair		du Soleil d'Or.
Dieppe	—	
Eu	—	Coquantin.
Treport	36	
Veules-les-Roses	—	
Fécamp	65	Grand Hotel Canchy.
Etretat	19	Hauville.
St. Jouin	—	Hotel de Paris.
Le Havre	23	Continental.
Harfleur	5	
Lillebonne	30	
Quillebeuf	Bac à vapeur.	
Pont Audemer	14	Lion d'Or.
Honfleur	34	
Trouville	14	Roches Noires.
Pont l'Eveque	13	du Bras d'Or.
Dives	18	Hostellerie Guillaume le Conquerant.
Caen	26	de la Place Royale.
Bayeux	28	de Luxembourg.
St. Lo	36	de Normandie.
Coutances	28	de la Gare.
Granville	29	Grand Hotel du Nord.
Avranches	26	Angleterre.
Pontorson	22	de Bretagne.
Mont St. Michel	10	Poulard Aîné.
Mortain	48	de la Croix Blanche.
Domfront	26	de la Poste.
Falaise	53	de Normandie.
Argentan	22	des Trois Maries.
Morcagne	58	du Grand Cerf.
Dreux	74	de France.
Chartres	34	du Grand Monarque.
Maintenon	18	
Rambouillet	22	de la Croix Blanche.
Paris via Versailles	50	

Guides and Maps.

Joannes "La Normandie," 7 fcs., 50 cents. Published by Hachette & Cie., Paris.

Carte Taride, Nos. 4, 5 and 8, 1 fc. each. Published by A. Taride, Paris.

Carte d'Etat Major, 1-80,000, 30 cents a sheet. (Sold everywhere.)

"Sur Route" Atlas-Guide, 3 fcs., 50 cents. Published by Hachette et Cie., Paris.

"Rambles in Normandy," by Francis Miltoun. Published by L. C. Page & Co., Boston.

A TYPICAL STRETCH OF AVERAGE COUNTRY ROAD NEAR WATERLOO, INDIANA—IT MUST HAVE BEEN WASH-DAY ON THIS FARM.

LAYING OUT THE ROUTE FOR THE BIG TOUR

By F. ED. SPOONER.

COLUMBUS, O., May 19.—Columbus is possible in a day's run from Indianapolis, and Indianapolis is possible in a day's run from South Bend. The two hardest portions of the trip of the "Pathfinders" in their great six-cylinder, 70-horse-power Pierce-Arrow car have been completed successfully, and, what is more, after hard storms, and the long journeys have been found not impossible.

The "Pathfinders" arrived in Columbus, Saturday night, after traveling 174.4 from Indianapolis, nearly 25 miles shorter than the estimated distance. This long journey was made after two days of hard rain, and yet the long, straight stretches of road from Indianapolis to Dayton, over the National Highway for a great part of the distance, and from Dayton to Columbus, were found possible. The road from Indianapolis is straight away, and cannot be lost. From Columbus to Springfield is again a long, straight stretch, and from Springfield to Columbus, another. The turn at Springfield and one at Dayton are the only ones to be made.

In good Summer weather, with the roads dry, this route will compare with any in the country, and from thirty to forty miles an hour as an average would be possible. The tourists will not make this, as they are to have a pacemaker twenty minutes ahead, and the pacemaker will keep the pace at legal speed. Beyond him a contestant cannot go under any circumstances, for should he do so it will mean disqualification.

With the completion of the trip to Columbus the entire route of the Fourth Annual A. A. A. Tour becomes known. The cars numbering from 1 to 200, with from five to six hundred people, will leave Cleveland, July 10, and proceed over the well-known route through Elyria and Norwalk to Toledo, a distance of 121 miles. At Toledo, as at Cleveland, ample accommodations for man and machine will be found.

July 11 the trip will be from Toledo to South Bend, a distance of 166 miles, a long day's run, but one which will be made easily in good weather, and with, perhaps, a little difficulty in bad going. The big Pierce averaged easily twenty miles an hour with frequent stops for pictures and for information at each town and on the road.

From South Bend, July 12, and returning to South Bend, July 15, the trip is 101 miles each day. South Bend provides accommodations equal to any that can be found on Broadway or elsewhere in the country.

NEAR SOUTH AMHERST, O., BEFORE THE RAIN HAD CEASED.

NEVERTHELESS OHIO HAS SOME EXCELLENT ROADS.

THE FIRST NIGHT'S STOP WILL BE IN TOLEDO.

The journey of 147 1-2 miles from South Bend through Rochester, Kokomo, and Tipton to Indianapolis had caused some speculation, but this route provides roads absolutely ideal and very interesting. In fact, all Indiana roads are good, much to the surprise of the "Pathfinders," who compare them to New Jersey and Massachusetts roads.

Indianapolis secured a place on the route at the last moment,

ELMER APPERSON TAKING THE PATHFINDERS INTO KOKOMO.

and by invitation of the city officials and the newspapers, and is so delighted with the prospects of having the tourists that it will give them a welcome second to none on the route. The cars will be parked around the National Soldiers' Monument and will be under guard of the city police.

The Indianapolitans met the tourists at Tipton and escorted them in. Edgar Apperson, of Kokomo, had met them at Rochester and taken them to Tipton, picking out an excellent but devious road, with some nineteen turns in a few miles. The Indiana Association of the A. A. A. will place signboards at every corner in the State, from the Illinois to the Ohio border.

A blind man could follow the route from Indianapolis to Columbus, for it is straight as a die from Indianapolis through to Dayton and again straight from Dayton to Springfield, and again from that city to Columbus.

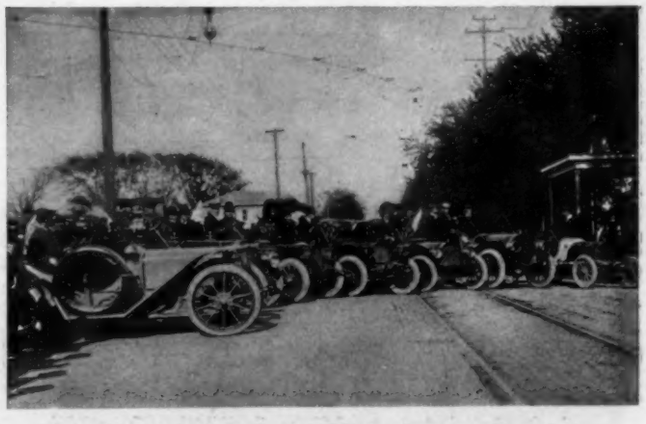
From Columbus the route will be eastward through Canton to Pittsburg, Bedford Springs (where Sunday will be spent), then Baltimore, Philadelphia, and New York. The entire route will be about 1,500 miles.

IN INDIANA WHERE SHEEP RAISING IS PROFITABLE.

PATHFINDERS OF COLUMBUS AND PIERCE'S PATHFINDER.

The route from Chicago east by the route the "Pathfinders" are following is new to tourists, but ideal in every way. From Indianapolis to Dayton it may be changed somewhat to allow of a side trip to New Castle. Vice-President Fairbanks sent Messrs. Maxwell and Briscoe to the main line of the tour to ask the committee to make a detour of a few miles to pass through New Castle.

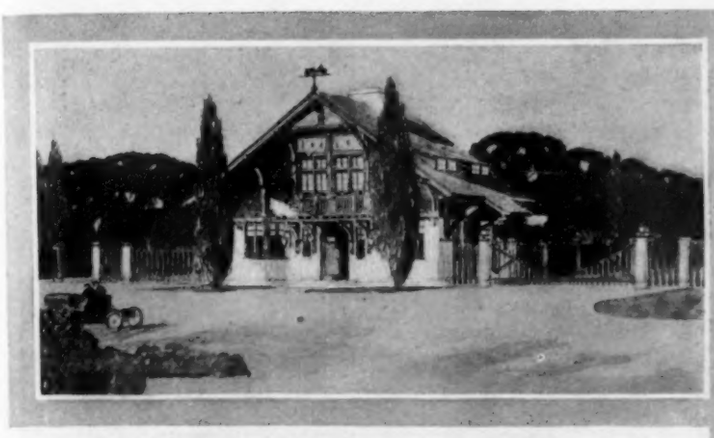
Thus far, and to the end, in all probability, the tourists have every facility for a good time. Good hotels everywhere promise



THE ESCORT OF THE PATHFINDERS INTO INDIANAPOLIS.

the finest accommodations, and agree in writing to keep the regular rates. Garage men promise gasoline and sign to supply it at regular rates. The roads are good all the way, and do not include tough going to any extent, and every point thus far honored by a place on the tour promises to treat the hundreds of tourists royally. Chairman F. B. Hower is a business man, and is arranging this tour on business lines, making sure of everything in writing, and taking nothing for granted.

The Pathfinding Pierce, with Dai H. Lewis, secretary of the Touring Board; Teddy Dey, driver, and F. Ed. Spooner, photographer, will continue its trip to Canton with a guide supplied by that city, to-morrow morning.



ARCHITECTURAL DESIGN FOR THE GATEWAYS.

A. R. PARDINGTON, VICE-PRESIDENT AND GENERAL MANAGER.

WORK BEGUN ON PARKWAY

LONG pent-up curiosity on the part of hundreds of autoists and others interested in the Long Island Motor Parkway was finally satisfied last week when the announcement of more than half the route was made, and what was considerably more to the point—work was actually undertaken. There have been so many conflicting rumors and so many unfounded reports, particularly regarding the amount of right of way donated to the corporation that it did not come in the nature of a surprise to learn that the present western terminus of the Parkway will be Garden City instead of Floral Park, three or four miles nearer the city line, as at first given out. The Parkway will start from a point about midway between Garden City and Mineola, and will be entered from the road running almost due north and south that connects the two. From here its trend will be practically due east on a line parallel with the main line of the Long Island Railroad and a part of the Vanderbilt Cup course of 1904. For six or eight miles the land is a dead level, and there is no necessity for either a grade or a bend. After passing Hicksville, where the railroad divides for the north shore branch, the main line takes a southward trend, and the route of the Parkway does likewise to avoid it. The country continues flat throughout that portion of the route until the latter bends northward, diving under or going over the Long Island Railroad tracks between Farmingdale and Deerpark; just what it will do here and other places where there are obstructions to be avoided will depend upon the result of the surveys. Once north of the railway line, the route strikes into what is known as the West Hills and Dix Hills section. Of course, Long Island cannot boast of anything very ambitious in the shape of a hill throughout its entire length and breadth, but this portion of the north shore extending from Cold Spring on the west to beyond Port Jefferson on the east is practically mountainous by comparison with the absolute flatness of the remainder of the island.

According to the government survey the hills vary from 200 to 300 feet above sea level, the latter being exceptions of course, and few of the roads reaching that altitude. Here, too, the Parkway will assume more diversity, not alone in the shape of scenery, but it will lose some of its arrow-like straightness, due both to the presence of the hills and hollows in question and to the necessity of discreetly going round the holdings of grouchy landowners who would not give permission to go through. However, any curves will be long and easy.

Although but 35 to 40 miles from New York City, this part of the island is but thinly settled, and is about as wild as any part of Long Island can be. Cross-island roads are few and far between after leaving the pike that connects Northport on the Sound with Babylon on the south side, and which passes through Deerpark, and those that are encountered are usually in hollows so that they will have to be crossed on bridges, thus adding a bit of variety to the character of the road. For a number of miles the route will skirt the side of the ridge that forms what appears to be the backbone of the island, occasionally rising to a high part of it and affording a view of the ocean where trees do not intervene to cut it off. But the land again comes back to the same dead level that distinguishes its first stretch, a little further along, and the speeder will get a view of not a little of that most characteristic type of Long Island vegetation, the scrub oak. The original formation of the island is also revealed in the miles of sea-sand and gravel, as the route approaches Lake Ronkonkoma, which is to be the terminus of the present stretch. This is a distance of 32 miles, almost in an air line, and it is expected that the gap between this point and Riverhead—a distance of 26 miles—will be ready for surveying long before construction is finished on the first portion. The work has been placed in charge of E. G. Williams, a Yale man, who has long been identified with railway construction both in this country and South Amer-

BEGINNING THE WORK OF SURVEYING THE ROUTE.

MAUD ADAMS' HOUSE NEAR LAKE RONKONKOMA.

A "WHITE" OBSERVER OF PICTURESQUE RONKONKOMA.

ica, and who is at present building the Washington tunnel. No decision has yet been reached as to the character of the material to be employed, but it is confidently expected that the Garden City-Lake Ronkonkoma end of the Parkway will be completed by November, though it may not be thrown open until the following spring.

POPE-TOLEDO BUILD VANDERBILT RACER.

Pope-Toledo will be again represented in the Vanderbilt Cup contest whenever that event is held. It appears that work has been progressing for some time on a special chrome nickel steel racer, all particulars regarding which are carefully withheld. It is declared that this is the most costly steel made, and that it is not only the strongest, but also the lightest and most flexible. In addition to the special racer, the Pope Motor Car Company will enter in the Vanderbilt race a type XV. 50-horsepower regular stock runabout. Herbert Lytle is reported to be the prospective driver of one of the machines.

DRAGON RACERS FOR VANDERBILT CUP.

The driver and constructor of the two racing cars being built by the Dragon Automobile Company for the Vanderbilt contest is L. Charles Kenen, a French designer of experience, who was for many years connected with prominent European factories, having been with Darracq, and for three years each with Clément and Brasier. Mr. Kenen has been at work for six months on the Dragon racers and is at present attending to the assembling of the engines, which he expects to complete about May 25. In the meantime the construction of frames and running gear for the racers is being pushed forward at the Philadelphia factory.

BRITISH AUTO RACE TRACK ALMOST READY.

LONDON, May 12.—A few weeks more and the world's first exclusive automobile race track will be thrown open for public displays of speed. July 16 has been fixed as the date of the first official meet at the Brooklands racing track near Weybridge, but the course will be open to the public for informal speed tests on June 15. At the present time the course is being treated with asphalt, and there is no reason whatever why it should not be quite ready for the date fixed. The course will be open every day for racing and private speed tests, and in addition there will be a number of interesting public competitions, the most important of which will be on July 16. A type of event which it is considered will be very popular is a race for cars of the same make and type. Thus there will be a race for 35-horsepower Daimlers, another for 30-horsepower White steamers, and another for 35-horsepower Mercedes. There will be special races for cars which have taken part in the important road races of the season, such as the French Grand Prix, the German Emperor's Cup, the Ardennes Circuit, etc. As an incentive to Continental manufacturers to send their machines over, the Brooklands committee will offer a prize of $2,000 in connection with each of these races. Saturday, August 3, and Bank Holiday, August 5, will be important race days, while the event for the German Emperor's Cup racers will probably be on September 21. Handicaps and selling plates are being arranged for on much the same lines as in horse races. In fact, the general lines of conducting the Brooklands course will be those of the principal English horse-racing courses. A prize fund of $75,000 has been set aside for the present season, a large proportion of which amount will be distributed on the opening day. The Brooklands track, built over the private property of Mr. Locke-King, is the first of its kind.

GENERAL VIEW OF BROOKLANDS AUTOMOBILE TRACK NEAR LONDON, SHOWING ONE OF THE BANKED CURVES FOR 100 MILE SPEEDS.

SOME FEATURES OF AUTOMOBILE CONSTRUCTION*

By THOS. J. FAY, E.E.

IN attempting to elaborate upon features of construction of automobiles, the dominant idea will be, to more or less discriminate as between (a) things tried out and found wanting; (b) things tried out and found satisfactory; (c) things in the air, so to speak.

It is believed, a society of engineers, to serve a useful end, should serve as a "clearing house" for engineering practices, rather with the expectation of ultimately fixing upon standards to go by. It is not the purpose here to advocate any scheme likely to limit the zone of activity of inventors, or place anyone in the position of having to conform to narrow conventions. On the other hand, it is feasible to aid invention and broaden the range of vision, by limiting the amount of details to be mastered, as well as decreasing the repetition of errors, costing as they do, *lives and money*.

It is not to be expected of any one to disclose advanced ideas of construction, yet, even so, a thing becomes free for discussion the very instant letters patent are granted, or the thing is placed on public view, and by discussion or the comparison of notes, the status of a device becomes, to a greater extent, a known quantity, when discussed by skilled engineers in a friendly way.

The speaker labors under the impression, borne of some experience, that it is to his advantage to have devices he may contemplate using or may have in actual use condemned for their faults rather than to be lauded for the advantages they may not possess at all, for in all truth an engineer, who follows up his errors, sticking to a narrow minded path of error, does damage to other engineers who may not be in a position to know of the fallacies; and to the public, who support an industry, the wrong is a double one, since the public may feel inclined to assume competence where incompetence may be the sole asset.

Engineers, then, may be frank with each other, for their mutual benefit and advantage, but they should be a little charitable in their criticisms, if for no other reason, because "glass houses cover a multitude."

Mistakes are only the products of activity, which, to illustrate, the speaker will cite an instance of a pattern maker he found in an establishment on an occasion, where the speaker assumed supervision.

The pattern maker in question was making a never-ending job of a bracket, of simple shape, and to hasten matters a little, the pattern maker was advised of the need of getting through some day.

Mr. Pattern Maker looked hurt, and by way of explanation he pointed out that he had never made a wrong pattern and he was at it for nearly thirty years; but the same pattern maker failed to explain that he had never finished a pattern, which was the true secret of his immunity from errors.

Engineers that do things do them right, if they know how, but they do them in any case, hence an engineer is a man that does right some times. If, then, engineers will confer a little, they will cease to be engineers at all, for as a result of comparison and discussion, they may succeed in always doing right.

Engineers are oftentimes placed in the position of having to do things that do not look right to them, simply because Mr. Commercial Man says "that is what we want." Mr. Commercial Man may not be amenable to argument, or may feel called upon to expose his dignity; but the consensus of opinion of a body of engineers would suffice to quell an earthquake, not alone to merely save the life of Mr. Commercial Man, who might otherwise allow his dignity to be exposed long enough to catch his death of cold.

*Paper read before the Society of Automobile Engineers.

Of the many points of construction in need of light and "more light," but few of them can be taken up at any one time, nor can any one man take time to become perfectly familiar with but a small part of the whole.

Since the last meeting of this society the speaker was afforded an opportunity to experiment at some length and more expense on the question of the means by which "alloy steel" may be machined and otherwise fashioned into shapes as required in motor cars, and if signs do not fail, the speaker labors under the impression he is not alone in the struggle.

It is one thing to say chrome nickel steel, for illustration, makes good metal for, say, axles, but it is another matter to say chrome nickel steel makes good axles. The best metal for axles is the best metal of which axles *can be made*, when it comes to facts, and chrome nickel steel does not grow soft in forging. To cope with this question, with a view to being able to say that commercially, important parts of motor cars could, as they should, be of nickel-chrome or other suitable alloy steel, the speaker has taken up the questions as follows:

(*a*) The desired characteristics of the steel.

(*b*) The desired shapes of the parts in which the steel may go.

(*c*) The machine tools required in the process.

In the new "Ellsworth" car the results of these investigations will ultimately be found, and briefly the conclusions reached may be set down as follows:

Chrome nickel steel, for motor car parts of responsibility, in which parts must be forged before machining, the steel must be particularly low in phosphorus and sulphur, and the relation of carbon to both nickel and chromium must be closely regulated. Manganese must not be interjected to doctor the steel in the absence of carbon, and silicon must be held at a uniform low value.

Strange to relate, it does not matter who makes the steel, if it is of the requisite qualities; but all steel made will not suffice for the purpose; in other words, a nice appearing representative of a steel firm will not in anyway make unruly chrome nickel steel amenable to conditions adverse to its composition.

Moreover, this product seems to have widely varying characteristics for slightly varying components, and it is also suspected that even the chemical composition is not all to be taken into account.

In other words, the raw products, of which the steel may be composed, must, in some small measure at least, influence the workability of the steel.

As regards the desired chemical composition of chrome nickel steel it may be it can at first be discussed in the abstract, with a view to limiting the components, and thereafter fix the relations of the components to one another.

Taking this view of it, the question of phosphorus is of the first moment and might be settled as follows:

PHOSPHORUS RATINGS

0.010 to 0.012	The range of phosphorus in the finest product capable of being forged and heat-treated
0.012 to 0.015	Low enough to be amenable to heat-treatment, forgeable, but lower in price than then the first named product
0.015 to 0.020	Low enough in phosphorus to be used without forging or heat treatment, but too high to consider in the finest grades of cars.
0.020 to 0.025	Limited to use in parts not likely to sustain severe shock loads, but not suitable for forgings.
0.025 to 0.030	Very questionable product—probably not as good as ordinary nickel steel.

The price of chrome nickel steel, while it is regulated by the "tariff," should be regulated by its prosphorus component first, and its sulphur component second, as follows:

SULPHUR RATINGS

0.010 to 0.015	Very low value to be found in chrome nickel steel, of an especially forgeable quality.
0.015 to 0.028	Limits of sulphur in chrome nickel steel of a fine quality for forging, if the phosphorus is under 0.015.
0.025 to 0.035	Range of sulphur in inferior chrome nickel steel, showing phosphorus between 0.015 and 0.025 not suitable for forging or heat treatment.
0.035 to 0.045	Inferior product probably not equal in any way to good nickel steel, for less cost.

Manganese in chrome nickel steel should range about as follows:

MANGANESE RATINGS

0.35 to 0.45	For steel holding about 30 points of carbon, 1½% chromium, and 3.30% of nickel.
0.65 to 0.75	For steel holding about 25 points of carbon, 1½% of chromium and 4½% of nickel.

Silicon seems to run about 0.20 per cent. for all the good grades of chrome nickel steel. It was found to be a little lower in some inferior product, and even a little higher in some good product; it would seem, then, as if the silicon rating should be fixed about as follows:

SILICON RATING

0.18 to 0.28	For chrome nickel steel low in sulphur and phosphorus, with manganese about 0.40 and carbon about 0.30.

The question of carbon is one not to be treated in the abstract at all, since carbon relates to nickel and chromium. Any procedure, then, involving the one must take into account the remaining two components. Having stated the abstract limitations, the best way to proceed, perhaps, will be to set down the formula of steel products and state results.

Chrome Nickel Steel—"A."

CHEMICAL COMPOSITION

Chromium	*Nickel*	*Carbon*	*Silicon*	*Sulphur*	*Phosphorus*	*Manganese*
1.40	3.30	0.28	0.20	0.015	0.012	0.40
to	to	to	to	to	to	to
1.50	3.40	0.33	0.25	0.020	0.015	0.45

Of copper and arsenic, a trace at most.

PHYSICAL PROPERTIES—NORMAL

T. S.	*E. L.*	*Ex-2"*	*Con. ¼"*	*Structure*
120,000	100,000	24	67	
to	to	to	to	Close
110,000	95,000	16	62	

QUENCHED AND ANNEALED

150,000	130,000	28	71	
to	to	to	to	Very close
130,000	115,000	18	62	

CASE-HARDENED

235,000	225,000	8	44	
to	to	to	to	Close core, thick armor
220,000	215,000	6	38	

Relative shock ability as compared with 30 carbon steel as 100 below N. C.

1	2	3	4	5
190	176	121	150	140

counting only the point at which both products bend until the test can no longer be continued.

After this test the chrome nickel steel may be bent double on itself, whereas the carbon steel would snap upon further bending, to any great extent.

This product is forgeable, and is rendered soft enough to machine by annealing to 630 degrees C. Forging should commence at between 1,000 degrees and 1,050 degrees C.—near the latter—and should be a continuous process down to 700 degrees C. to about the formation of large crystals. Before forging the pieces should be raised slowly and through to 900 degrees C. and allowed to "soak" for a time. Prior to forging, each piece should be raised the remaining difference, and forthwith start the forging process.

The oil tempering process can be to 800 degrees C., with subsequent annealing to 550 degrees C., or to 1,000 degrees C. and subsequent annealing to 550 degrees C.

For gears to be oil hardened they can be raised to 1,000 degrees C., quenched in cold water, then in oil, and subsequently reheated to 335 degrees C. and cooled in the open. Gears thus treated will be both tough and hard.

Still another product, but somewhat higher in price, may be set down as follows:

Nickel Chrome Steel—"B."

CHEMICAL COMPOSITION

Chromium	*Nickel*	*Carbon*	*Silicon*	*Sulphur*	*Phosphorus*	*Manganese*
1.50	4.40	0.22	0.21	0.012	0.012	0.65
to	to	to	to	to	to	to
1.60	4.50	0.28	0.25	0.015	0.015	0.75

PHYSICAL PROPERTIES—NORMAL

T. S.	*E. L.*	*Ex-2"*	*Con.-¼"*	*Structure*
122,000	112,000	28	69	
to	to	to	to	Close
114,000	100,000	22	64	

OIL-TEMPERED AND ANNEALED

155,000	138,000	18	35	
to	to	to	to	Very close
145,000	130,000	12	25	

The speaker has not tried this product "case-hardened," but he has seen case-hardened specimens and they looked to be thoroughly good in every way.

The especial value of this steel lies in its forgeability; it can be hammered out from a cube to a thin disc and show no signs of cracks, or it may be forged and expanded into weldless rings, one of which the speaker saw being two inches thick, with a bore or hole fully 18 inches in diameter. The normal physical properties are scarcely different from the physical properties of some very inferior product; yet even so, under the hammer or in heat treatment this product is vastly superior. To illustrate this point, an inferior product will be set down as follows:

Chrome Nickel Steel—"C."

CHEMICAL COMPOSITION

Chromium	*Nickel*	*Carbon*	*Silicon*	*Sulphur*	*Phosphorus*	*Manganese*
1.90	3.31	0.227	0.15	0.033	0.030	0.34

PHYSICAL PROPERTIES—NORMAL

T. S.	*E. L.*	*Ex.-8"*	*Con.*	*Structure*
162,000	107,000	7.5	19	Open

This product is obviously not a fit product for use in any shape in a motor car; but upon forging, it exhibited almost no elongation in the expanding ring test; yet even so, the chemical composition would be considered good as ordinary steel is rated, and the high-sounding tensile strength would cause an increase in the respiration of a novice. There is a lot of this stuff to be had on the market, the price of which is high enough to give it the ring of quality; nevertheless, "beauty is as beauty does."

(To be continued.)

Some Common Defects.—We have recently pointed out certain forms of construction—notably in connection with the attachment of springs—which are as bad as they are common, and we therefore need not refer to them again, except to say that one may see even worse designs, which have been evolved by ignorance combined with the desire for originality, says *Engineering*. Another feature in which many makers show thoughtlessness is in the arrangement of the steering gear. In nearly half the cars the coupling rod is placed in front of the axle instead of behind, where it certainly should be.

CONCERNING THE USE OF THE DRY CELL

By ARTHUR F. JACKSON.

EVERY dry cell that will register between fifteen and twenty-five amperes on a reliable ammeter is capable of furnishing satisfactory ignition service, and if such is not obtained it is through no fault of the cell. No dry cell dies out without a cause—external conditions—which it does not control and for which it should not be blamed. An ignition battery of dry cells is as reliable as a safety valve to a steam boiler, and if users will be guided by its action they will be well on the road toward a solution of ignition trouble. Dry cells, when intelligently and properly used, furnish the best ignition. Superior to storage batteries, wet batteries, or magnetos, and the cheapest, cleanest and safest.

These are startling assertions, I appreciate, but nevertheless are demonstrable facts and I trust they will lead to a thorough investigation by competent persons, intelligent, with good "horse-sense" (not experts) and capable of putting aside prejudice. I have handled thousands of dry cells during the past two years, have made numerous severe tests along various lines, have been in close touch with manufacturers, have investigated a multitude of complaints, and have had the benefit of the experience of one of the most expert manufacturers in the business, who has devoted the past fifteen years to this specialty; so my statements are neither hasty nor immature. I have never had a complaint which, upon investigation, failed to show conclusively that the fault was not with the dry cell. During this time I have never had a cell or battery of cells which acted inconsistently, nor have I had one to depreciate quickly without external cause.

The reason for the unsatisfactory results generally obtained from ignition batteries of dry cells is *improper* use. There should be as much intelligence in the use of dry cells as given to the other details of the engine. It is generally the contrary. I will gladly contribute toward the necessary expense to carry on exhaustive *practical* tests of dry cells and of comparative tests with storage batteries and other sources of electricity for ignition if others will join.

Why the Dry Cell Gives Out Quickly.

An illustration of the conditions of use almost universally prevailing and the reason for poor service obtained from dry batteries is to be found in a complaint I attended to recently. John Smith, who is an intelligent young man, has a small repair shop for automobiles. He complained that he only obtained some fifty miles from a fresh battery of dry cells in his own car. Investigation showed that he had a high-grade coil, which he recently paid $80 for. Tested current consumption of coil. Found one unit taking in excess of four amperes rate of current and the other three units taking between two and four amperes. Also, one vibrator frequently *stuck* to the point and caused a dead short circuit. Impossible to adjust coils to proper rate of current. This condition is absolutely improper and unnecessary, for good coils—and this make is of highest grade—only require from 1-4 to 3-4 ampere rate of current for perfect ignition. This coil had been injured and possibly ruined by abuse without anyone being the wiser.

Another point which is not understood is the matter of voltage and amperage. Many are under the impression that excess of voltage is injurious to coils, but that any ampere rate of current may be used without harm. This is exactly contrary to facts. A few volts more than absolutely necessary will not injure the most sensitive coil, but an excessive rate of current—regardless of its pressure or voltage—will cause arcs at the vibrator points, quickly causing a pitting of the platinum points and the points of the plug and create other harmful conditions in the various parts of the ignition system. And this excess current is generally caused by insufficient voltage at the primary terminals.

Dry cells have a peculiar ability to offset inadequate voltage by increased current, although it quickly exhausts them. Many users are under the impression that because a dry cell registers 1 1-2 volts by meter test when fresh and unused they should use four-cell batteries for six-volt coils. This meter measurement is the inactive pressure. It is the initial voltage and a false voltage. The voltage or pressure of the service current of dry cells is between one volt and 1 1-4 volts, consequently not less than five-cell batteries and preferably six-cell batteries should be used with six-volt coils. A six-volt coil will have to be adjusted to a high rate of current when fed with a four-cell battery. The same coil will furnish perfect service with a current of 1-4 ampere when fed with a six-cell battery and not require further adjustment—it will not arc at vibrator points and will not suffer an internal short circuit. In fact, will be under proper conditions, and the ignition will be fast, hot and satisfactory.

Another condition which prevails is the misrating of coils. There are some jump-spark coils on the market and largely sold—represented as "six-volt" coils—which require 10-volt to 12-volt batteries to properly feed them. It results in users connecting them with insufficient batteries and obtaining not only poor service, but very short service from each battery. The fact that a coil may be "sparked" with a certain number of cells of battery is not an indication that that is the proper size of battery to use. You may "spark" a primary coil with a single cell, but the amount of service which a cell would furnish might be but a few minutes. It is the same with jump spark coils. A battery of three or four cells will spark them, but that does not indicate the proper size battery to use. The proper size battery is that one which experiments show to furnish the maximum amount of service and best quality of service with minimum deterioration.

Other Parts of System Also to Blame.

The timers, too, are responsible for a large amount of ignition trouble. It is a mistake and a misundertanding of their true purpose for manufacturers to disregard battery consumption when designing this apparatus. A timer which is built with the sole purpose of long continued term of spark service ignores another condition, just as important, which it should control—battery service. Such a timer provides but a trifling interruption of the current, and at the high speed of automobile engines the current is so nearly continuous as to amount to closed-circuit conditions and cannot be met by dry cells. This disregard of current interruption is entirely unnecessary, for there are many timers which are perfectly satisfactory in service and which have such an interval between points of contact as to make a definite interruption of the current.

The matter of the grounding of the battery should have more intelligent treatment. It is not sufficient to ground on any metal part of the frame or engine. The further from the point of action and the more indirect the course, the greater the current waste and the slower action will be obtained. The primary current is very feeble and it is ridiculous to make it search for a way and overcome such obstacles as rust and metals of different conductivity to reach the point of action. Ground your primary wire close to the plugs or where the conducting medium is direct and of high conductivity.

Keep batteries absolutely dry. Protect them from any metals coming in contact with them. Avoid frequent ammeter testing. Make the interbattery connections only with such connectors as *cannot* extend beyond the rim of the knurled nut. If batteries are quickly exhausted or run down between periods of use search for the trouble in your ignition system and correct it. Dry cell batteries do not do this without cause.

MINOR PROBLEMS OF THE AUTO CAB

By W. F BRADLEY.

WITH the advent of the automobile cab and the automobile omnibus new problems present themselves. Although a more costly and a more important unit, the ponderous 40-horsepower, 50-passenger omnibus such as is in use in large European cities, is an easier machine to construct and a simpler one to keep in operation than the modest 10-horsepower cab, which has become a necessity to Parisians and Londoners and will soon take out its naturalization papers in New York and other American cities. While 'buses are being constructed in hundreds, cabs are being turned out in thousands. Greater care can—indeed must—be selected in the choice of drivers for the heavy brigade, and their fixed itinerary allows them to receive attention from skilled mechanics in a manner altogether impossible with the small freelances.

At least half a dozen European constructors have designed and produced special cab chassis which may be described for want of a better word as absolutely fool-proof. Given two pupils equally ignorant of driving and caring for an automobile and a hippomobile, and the one with the modern auto cab would certainly become a safer individual to turn loose on the crowded streets of a big city than the latter in a given space of time.

But the auto cab driver is no more self-evolved than is any other type of genius. He has to be made by outside agencies, and the outside agencies for his making are not to hand. Paris has discovered this to be true. The first three hundred cabs to be put in operation were commanded by a superior set of men, young men who had the foresight to discover a future in the automobile cab, who studied the automobile or left positions in the mechanics' shop for a freer life in the open air. They were competitors and as such had to be efficient to succeed. But Paris has a fleet of 10,000 cabs in constant service and it is not to be expected, nor is it desirable, that when these are cast aside, as they will be within two or three years, that the veteran horse drivers should be abandoned also. Training them, however, to handle even a simplified Renault, Darracq or Bayard-Clément, automatic in almost everything but changing of gears, braking and steering, is an elaborate procedure. A score of stories could be told of the stupidity and gross ignorance of the horse cab driver who has abandoned the reins and the whip to sit behind a steering wheel. Some of them would be comical if they were not utterly stupid. A well-known automobilist relates how one evening he jumped into a Renault cab and told the driver to take him as quickly as possible to a street high up on the Montmartre hill. In the Rue Lepic, with its 10 per cent. grade that the horse drivers refuse to negotiate with a load, the little Renault stopped dead and began to run backwards until the driver had the sense to apply his brakes.

Turned round to his passenger, the undergraduate-chauffeur said: "Can't get up there; it's too steep."

In an instant the passenger was out, cast a rapid look over the machine and said: "Why, you are driving on second; if you can't get up on second, use your first."

"Oh, they told me to put the lever in that notch there, that's all I know about it," said the ex-horseman.

"Let me try; you see I have my license; it is for the same make of machine, and as I have often climbed this hill with a heavy closed car, I don't see why this light machine should not do it."

In a second the engine was cranked, the machine started easily on first speed and reached the top on second gear. The journey over, the passenger thought a little gratuitous instruction would not be amiss. Raising the hood, he said: "How many cylinders has your motor?"

"I don't know," was the reply.

"Well, there are two; see, one, two," touching them.

"Oh, yes, there are two," said the driver, complacently. Had he been told that there were six, he probably would have assented just as readily.

Government regulations require that every driver of an automobile shall have a thorough knowledge of the mechanism of his machine. Sometimes the inspector is conscientious and, after assuring himself that the candidate can steer round a block without shaving the mud off the market wagons, will order the hood to be removed and will pose a few questions. The proprietor of an automobile school whose pupil was refused owing to inability to lay his hand on the carbureter without hesitation, was indignant against the authorities and asked with rising wrath, "How much do they expect us to teach them for ten dollars?"

It has been suggested that a special operating license should be granted for automobile cab drivers, comprising merely an ability to steer a car, and supposing no mechanical knowledge. Such a plan would doubtless be prolific of incidents similar to the one which recently came to our notice, when a driver telephoned to headquarters that his machine was broken down, lodged himself comfortably inside the cab and waited an hour until an expert arrived on an emergency repair van to replace a detached wire.

There is no alternative for operating companies. Although it may call for the expenditure of a large sum of money, they must be prepared to train the existing raw material as promoters of other new enterprises have had to do. When the gasoline cab comes to this country it will go through the same ordeal as the Paris vehicles are now enduring. The initial vehicles will be handled by men already versed in automobilism, the mass of them will have to be turned over to men only familiar with four-legged power. On the pains taken to convert this raw material will depend, to a certain extent, the success or otherwise of the poor man's automobile.

AUTOMOBILE TRAINS FOR BARBIZON.

PARIS, May 13.—Every visitor to France has made a pilgrimage to Barbizon, rendered immortal as the home of Millet and the hallowed ground on which was painted *L'Angélus*. Had not the famous painter discovered the village it never would have been known except as one of the many picturesque and peaceful retreats on the edge of the Forest of Fontainebleau. The wheezy diminutive locomotive which for a number of years has united the village with Melun, the nearest town, and carried thousands of pilgrims from all lands to the historic shrine, will no longer share the road with automobiles, cyclists and market carts. It has been replaced by a more modern means of transport in the shape of a Decauville automobile on rails. The motive power of the train is a 16-horsepower, four-cylinder Decauville gasoline engine mounted on an open car similar in general appearance to the summer surface cars of New York. A load of thirty passengers can be carried at a speed of twenty miles an hour on the level, and the engine is sufficiently powerful to climb the 10 per cent. grades met with on the road. Not only will there be a considerable saving in time, but a more economical service will be obtained by the conversion to gasoline.

A repair wagon driven by a four-cylinder gasoline engine has been adopted for use on the Paris Metropolitan underground railroad. The gasoline motor has been proved after experiments to give the best results for this class of work. The wagon is intended for use only when the electric current has been cut off in order that the breakdown gangs may work on the track with greater security. In addition it will be used as an inspection car during the hours when the ordinary service is suspended, electric trains not running between one and five in the morning.

DEVICES FOR BEATING THE FUEL RULES

NOT only the Grand Prix, but other smaller French races are to be run this year on a limited fuel allowance. To preclude the possibility of fraud the club committee stipulates that filter, stopcocks, carbureter intake and tank fillers must be sealed according to their instructions; an illustration of these methods was shown in the issue of THE AUTOMOBILE for March 28. If the driver can cheat the regulations and give to his engine more gasoline than the committee placed in the tank, his horsepower can be increased and his chances of winning thereby enhanced. *Omnia* thought it might be possible to cheat the regulations, and, in order to test the supposition, invited its readers to a "frauding competition." Nearly one hundred solutions were sent and have just been classified according to their value by a vote of readers of that journal.

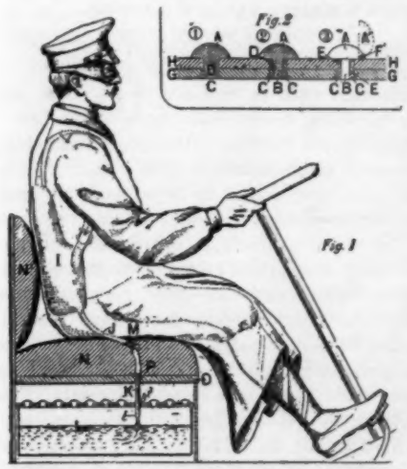


FIG. 1.—First prize winner, device for adding gasoline to gravity feed tank.

We reproduce the three winning systems, and give a résumé of the manner in which their designers intends them to be used. First prize winner says that although the method of sealing the fuel apparatus is not perfect, it is advisable to leave the seals severely alone and get an extra supply of gasoline, as shown in the sketch. There is no stipulation as to the position of the fuel tank; thus he would place it under the seat. The driver would carry concealed under his clothes, and held in position by braces, an india-rubber bag containing four or five gallons of gasoline, a rubber tube with a stopcock being attached to the bag. One of the rivets in the top of the tank is specially prepared to lift out or to hinge open, leaving a hole in the tank through which the rubber tube can be passed. Between the top of the tank *L* and the frame *O* is a certain space filled with cotton waste or tools. During the race the driver stops, fumbles about under the seat as if to find a tool, but in reality pushes the end of the tube through the hole into the tank. By leaning against the back of the seat pressure can be exerted on the tank and the gasoline forced out.

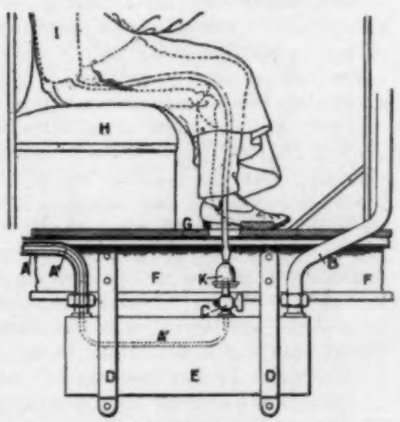


FIG. 2.—Second prize, device for adding gasoline to tank under pressure.

Fig. 2 supposes that the tank is under pressure. Generally in such a case the oil is under pressure also, contained in a cylindrical tank within the chassis. In nearly every case the tank is supplied with a cock to relieve the pressure when it is desired to fill. In order to cheat the regulations this tap, instead of communicating simply with the interior of the tank, is connected with the air inlet. As this pipe is branched on to the air pipe leading to the gasoline tank, nothing is more simple than to send a supply of gasoline where it is needed. The manner in which it is carried is practically the same as that described for No. 1, and will be readily understood by reference to sketch.

Fig. 3 prefers to operate with a tank under pressure. Generally this arrangement comprises an air pump, and it is this which furnishes all that is necessary to cheat the regulations. If this pump can be made to pump gasoline instead of air, it is evident that it will fill the official tank without anyone being aware of its villainous rôle. The accompanying sketch shows how this is done, and it is hardly necessary to enter into details. A rubber tube connects the pump with the illegal tank, which in this case would be a tire carried at the rear of the car. During the race the machine would stop at the tire station, take on board a batch of tires, one of which would contain gasoline instead of air. While the car is running the mechanic would make the connection and on quiet stretches of the road would send a quantity of gasoline through to the official tank. If the pump were fitted with a spring the mechanic could operate it with his foot with still less fear of detection. By this arrangement the driver could take a fresh supply of gasoline at each round if he desired and thus beat all fuel consumption records.

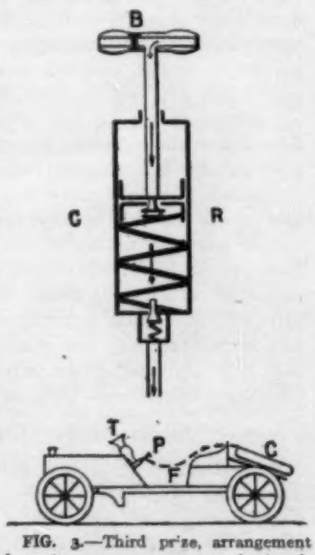


FIG. 3.—Third prize, arrangement for using pressure pump to obtain additional supply of fuel.

Probably the chief value of the "frauding competition" will be that it will render fraud even more difficult, for, having had revealed to them one hundred methods by which their regulations might be brought to naught, the committee will be on the watch to see that none of them are put into practice. In the Grand Prix, run on a guarded course under the eyes of thousands of spectators and carefully watched by numerous officials, even the most ingenious of the frauding practices would be put into operation with great difficulty. In touring competitions they might be successful.

POPULAR FETES TO PRECEDE GRAND PRIX.

PARIS, May 16.—As a prelude to the Grand Prix, to be run on the Dieppe course on Monday, July 2, there will be a series of motor boat races off the town of Dieppe on the Sunday of June 1. A triangular course, about three miles round, will be marked off, sufficiently near the shore for the races to be followed constantly by spectators, and the start will be arranged so that the contest will finish about 3:30 in the afternoon on account of the tide. Details of the boat races have not yet been discussed, but owing to the location of the town, three hours by rail from Paris and five hours from London, a huge attendance is counted on. During July and August Dieppe is the seaside resort most visited by holiday makers, English people being almost as numerous as the native French, for although the Britain is no lover of the Continental Sabbath on his own shores, he is particularly happy to have the opportunity of running across the Channel for a week-end relaxation. A prize list of $4,000 is already assured. The fastest French, Italian and British boats will compete.

REMEDIES FOR ROADSIDE PERPLEXITIES

By THE MAN AT THE WHEEL.

NOT long ago I came across one of those owner-drivers whose skill at the wheel is second to none, but whose knowledge of things automobile does not extend a great way beyond this essential. He is one of that numerous class that looks upon the magneto with reverence akin to awe; it's all right as long as it continues to perform its duty, but when it goes wrong he's all at sea and simply doesn't know where to begin to open it up to get at the *works* when anything goes amiss. This was the case when I saw him last, for his car was at the side of the road, and he had a puzzled air of helplessness that would have appealed to a rapacious constable. His very expression seemed to say "Won't somebody kindly help me out of this?"

He explained things in a few words; his car was fitted with a duplicate system of ignition throughout, but the accumulators, being in need of recharging, had been left behind in the garage on charge, particularly as he was only out for an afternoon's run and had not intended to go very far. And he had not got as far as he had intended before the motor began to miss and finally stopped. Naturally he blamed the magneto, and sure enough the magneto was at fault. It had run all last season—in fact, ever since the car had been put in commission, and during that time a great many miles had been covered without so much as a look at the machine. It was a well-known make of the high-tension type, and he felt considerably relieved to see me remove the shield that covers the contact maker. A little oil and a little dirt in the wrong place, but chiefly a contact spring that had lost much of its youthful powers was the sole difficulty, and it did not take five minutes tinkering altogether to put things right again.

Increasing Fuel Consumption with Age.

Why should a motor use more gasoline as it grows older? is a question that crops up every now and again, and one that I heard brought to the fore by an autoist quite recently. "I always managed to average a good 18 to 20 miles a gallon on give-and-take roads around this district, and that means more or less hill-climbing all the time, but now I don't seem to be getting much more than 15 or 16, and sometimes not as good as that," he said, in explaining matters. Granted that, other things being equal, a motor runs easier once it finds itself, as the saying goes, why should it not continue to run just as easily and develop as much power as when it was new, so long as it is kept in good running order. In fact, there have been stories to the effect that, like a man attaining his prime, a motor developed 20 to 25 per cent. more power when it was five or six years old than when it was brand new. The accuracy of such stories naturally depends largely upon the imagination of those who tell them, and when sifted carefully it is found that, as a general rule, the driver who tells them depends very much upon his instinct as to "how she pulls" regarding the amount of power developed.

But where an autoist is sufficiently observant to make careful record of the car's gasoline consumption, and detects a falling off in performance of a mile or two to the gallon, the matter is different. It goes without saying that any piece of mechanism loses in efficiency with age, despite the best of care, but there are not many automobiles in daily use that are old enough to come in such a category as would be implied by this. The motor in question had done some 10,000 to 12,000 miles, extending over a period of two years, with an almost unvarying record of fuel consumption. The case might appear puzzling at first sight, but a little questioning shed considerable light on the matter, and investigation proved the diagnosis to be quite correct.

The car had not been used much during the winter and had been put in commission without any preliminary overhauling of any kind. It had run probably a month or more in this condition, during which time the fault complained of was noticeable. Gummed oil and carbon under the piston rings, preventing proper seating, and valves that needed a bit of regrinding, seemed to be most likely causes. Instead of resorting to the makeshift of flushing out with kerosene or gasoline, the delayed overhauling was given and the motor dismantled. The rings were found to be chiefly at fault, as the accumulation of caked oil and soot had prevented them from bottoming in their grooves at all.

An Unsuspected Cause of Ignition Trouble.

There is little doubt but that in the average autoist's mind the ignition ranks highest as a disturber of the driver's peace of mind. And his estimation of it is well founded at that, for it has been figured that, taking automobile shortcomings as a whole, the petty defections of the ignition system constitute fully half, and are in consequence accountable for most of the delays. But, though the ignition itself may appear to be at fault, it is not always due to some inherent cause, for, besides being the root of a very large part of the troubles that cause halts by the wayside, it also is the most susceptible essential of the power-plant. I saw this strikingly exemplified only very recently. Going along an out-of-the-way back road in the country road, I came across a party camped by the wayside. There were two young fellows and two girls, and the former looked as if nothing short of a Turkish bath would ever make them feel comfortable again, so dirty and bedraggled did they look; the feminine end of the party was still immaculate in all its summer finery, and though they had made light of the mishap at first, by the time we came along they looked as hopeless as the other two, for we were the first thing to pass along that way in two or three hours.

The car was of the light touring type with a horizontal-opposed engine under the body, so it may appear at first sight as if the predicament in question mainly grew out of its peculiarity of construction, but there is a lesson to be learned from it, none the less. Our proffered assistance was only too eagerly accepted; if we had gone by without at least the offer of a tow they would indeed have felt in the position of the shipwrecked party that sees its last chance of rescue fade below the horizon. "What's the trouble?" only brought a sadly prolonged negative shake of the head. A tow was the only thing in the driver's opinion, and though his knowledge of things automobile had suffered a severe tumble in the estimation of the rest of his party during the past few hours, no one suggested anything.

We began to nose around, and, as a preliminary, took out the spark plugs, much to the disgust of our friends, who remarked that they had had them out a dozen times or more, and they worked all right. The motor would start without any great difficulty, but would lay down again often before it had gone a block. A look at the plug ends showed quickly enough what was the matter; they were dripping with fresh lubricating oil, the gap of one of them being bridged by a fine big globule of the lubricant. There was no sight feed on the oiler, properly speaking, only a "bleeder," so-called, because it could only be called upon to see whether the oiler was working or not. We opened the oil tank and it was empty, though we were assured that a quart of fresh oil had been dumped into it before starting out. The rest hardly calls for any explanation. On opening the crank case it was found that the oil in it was so deep that it was slopping around inside the pistons. It was only a matter of a few minutes to draw most of it off, adjust the oiler properly, and fill it again. This and a cleaning of the plug ends set things right, and we were profusely thanked. While the ignition of an engine of this type is more prone to be interfered with in this way, an excess of oil is equally bad in a vertical engine, and it will work above the pistons. Beside its tendency to burn and form a troublesome carbon deposit there, it will also find its way to the spark-plug terminals and cause the cylinders to miss.

LETTERS INTERESTING AND INSTRUCTIVE

The Popular Fallacy of Starting "On Compression."

Editor THE AUTOMOBILE:

[751.]—In your issue of April 25, 1907, under heading "Brief Items of News," you have an article in which it is stated that a certain make of car, which was at the time in St. Louis, was started from the seat by the spark, after standing for one week; claiming that the compression had been held for that length of time (?).

I have frequently started a four-cylinder car by opening petcocks over cylinders, and squirting in a little gasoline, closed petcocks and started car from seat, without cranking, by throwing switch plug. There was no compression in cylinders.

Will you please explain these matters?

It does not appear to me to be necessary for an engine to have compression in cylinders to start from spark (or seat), if the gasoline vapor is there in sufficient quantity to ignite.

Dallas, Tex. F. S. T.

Much of the ground included in your inquiry is covered by the answer in this issue to the letter of A. Conrad. As there noted, the popular impression that the sole reason for the ability of a motor to start by switching on the current lies in its capacity to retain a *compressed* charge indefinitely, is very general. It is merely one of those popular fallacies that originate in the air and take such firm root that it is impossible to eradicate them. Your experience in starting a motor from the seat merely by priming with gasoline through the petcock is a common one and can be repeated almost indefinitely on any good motor. Should such a demonstration fail to convince some of the doubting Thomases that the motor did really start without any preliminary compression of the charge, a very simple experiment should be sufficient to remove all question. Take an old tin can, spray its walls with a little gasoline; give the latter time to evaporate and then invert the can over a spark plug. Switch on the current and, unless too much gasoline has been used, the way the can will jump at the resulting explosion will be eye-opening. A modification of the experiment may be made by taking a short piece of iron pipe and plugging it at both ends with corks, through one of which the connections for firing the charge are inserted.

Tire-Valve Information Inquired For.

Editor THE AUTOMOBILE:

[752.]—Though I consider myself a seasoned motorist—if five years' experience as an owner of cars deserves to be termed a seasoning process—there are a whole lot of things that I desire to know about tire valves. Simple as this very small detail of automobile construction seems to most people, I believe that it is less understood than many a detail of far greater importance and complication. At least, in my own experience I am free to admit having never solved a number of the tire valve problems, and I am equally free to admit a thirst for information. Can you not, in "Letters Interesting and Instructive," explain a few of the peculiarities of tire valves—the ones with which every automobile user at one time or another has been confronted? For instance, what are the purposes served by each small part of the standard type of valve; what is the reason for valves sticking as they do sometimes against the pump, etc.? DR. ELTON CARTER.

Madison, Wis.

The ordinary Schrader tire valve, now applied to nearly all automobile tires, is a much simpler affair than your criticisms suggest, but it is, as you say, subject to at least a few rather disconcerting ailments. Almost any tire catalogue shows sectional and other views of valve constructions, however, so we do not feel justified in using space to answer this portion of your inquiry. The sticking of valves, in spite of the highest pressures that can be brought against them by a pump, is due wholly to their exceedingly small size. The usual condition in a case of this kind is that the tiny rubber washer used to insure airtightness becomes gummed to its seat, in which condition it exposes a circle probably not over one-sixteenth of an inch in diameter to the pressure. The consequence is that a pressure even as high as one hundred pounds to the square inch figures out only about five ounces on the area it can reach, and this force is quite likely to be insufficient to dislodge the adhering part.

Position for Carbureter on Two-Cylinder Motor.

Editor THE AUTOMOBILE:

[753.]—Will you kindly give me some information on the following points? I have a two-cylinder, double-opposed, horizontal motor, the carbureter and intake manifold of which are situated as per the accompanying rough sketch. Can I alter this so as to feed the fuel nearer to the inlet valve of one cylinder than the

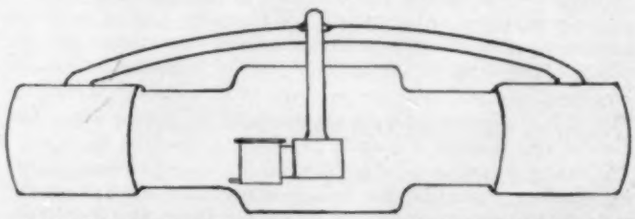


DIAGRAM ILLUSTRATING LOCATION OF CARBURETER AND MANIFOLD

other, and obtain as good result as is at present the case where the fuel is fed from the center of the intake manifold? By being able to feed the fuel from one end, I can save two elbows in the piping and reduce the length by about a foot of pipe, which should make the fuel better. W. M. CASE.

Clarksville, Tenn.

Erratic running is apt to result from such a change as you mention, owing to the fact that as thus arranged one cylinder will be exerting a much more powerful suction on the jet than the other and the ratio of gasoline and air will accordingly vary with each power stroke. If it is merely desired to remove the carbureter to one end of the motor from its present position, this may be done by leaving the main portion of the manifold as it is and extending a horizontal branch from its center to the new location of the carbureter, as is done in the case of motors having such an arrangement. Designers differ as to the importance of having the carbureter as close to the inlet valves as possible and, while numerous motors are built on this plan, others are designed with the carbureter on the side of the motor opposite the intake, thus entailing an extra 20 to 24 inches of pipe or more. The theory is that the mixture is apt to wire-draw or condense in its passage through a long tube, while the opposing opinion of those who favor the long tube is that it always holds a supply of the mixture in reserve and its constant movement through the tube tends to make it more homogeneous, while the proximity of the tube to the cylinders prevents condensation. Thus the saving of a foot of pipe would hardly constitute a material benefit; the elimination of two elbows, particularly if of the right-angled type, might be of more importance, but as you have shown the manifold in your sketch it has uniform curve with an easy entrance at the valves, and we fail to see how you can improve upon this merely by shifting the position of the carbureter. If you will look through the back numbers of THE AUTOMOBILE you will find a case where a subscriber complained of having a great deal of trouble from just such an arrangement as you consider installing, and we advised him to alter the manifold so as to make the carbureter equidistant from both cylinders.

Recharging Dry Cells and Accumulators.

Editor THE AUTOMOBILE:

[754.]—Can a dry battery be recharged, and if so, how? I have at my disposal a dynamo and small switchboard, and from these how can I recharge a storage cell? H. RELHAM.

Chicago, Ill.

It is possible, but not commercially practical, to recharge a dry cell. The latter does not constitute what is technically termed a reversible voltaic couple, *i.e.*, one in which the chemical processes of formation occasioned by the passage of an electric current through it, can be reversed by connecting the cell to some other piece of apparatus and using the current drawn from it. If a battery of dry cells be placed on charge for a considerable length

of time, a slight current may be drawn from them, but it would be about equivalent to pouring a bucket of water on a large quantity of sand and then squeezing the sand in an attempt to recover the water.

To charge a set of accumulators, the latter should be connected up so that the charging current is sent through them in the proper direction; that is, the positive pole of the dynamo must be connected to the positive terminal of the battery and the same with the negative. You do not mention whether your dynamo delivers an alternating or direct current. If the former, it cannot be used without the use of a converter of one type or another to alter the character of the current. We presume it is of the direct current type, so that this is not necessary. By storage cell we presume you refer to the ignition sets of accumulators usually employed, and will take one of these as an instance. Assuming that it is a six-volt set with a capacity of 60 ampere hours, the current sent through it must be regulated to conform to its size. The safe discharge rate of an accumulator is also its safe charging rate as a rule, and the former is generally stamped on the cell. In the case of a set such as mentioned the safe maximum would be a current of 10 to 15 amperes, thus completing the charge in from four to six hours. This is not at all to be recommended, however, as the slower the charge the better and a current of 2 to 4 amperes, extending the charge over a period of 15 to 30 hours, would be much better. The rheostat or resistance mounted on the switchboard should be employed to reduce the current to the amount required. You do not mention the voltage of the dynamo you have, but unless the latter be of the type employed for electro-plating, which is designed to give a large amount of current at a very low potential, it can be used. The current should have a potential of about 9 or 10 volts at least, as the cells when approaching the end of their charge reach a voltage slightly in excess of 2.5, or close to 8 volts, for the three-cell set. The evolution of gas becomes quite violent as the cell approaches repletion and the solution appears to be boiling, this often being regarded as an indication that the operation is complete, but it is not always reliable. Testing each cell with a low-reading voltmeter or with a hydrometer should be resorted to; in the former case the reading should be 2.5 volts or over, and in the latter a specific gravity of 1.2 to 1.26.

What Is the Cause of Lost Compression Here?

Editor THE AUTOMOBILE:

[755.]—I am a very interested reader of your "Letters Interesting and Instructive." Would like you to give me some information on the following:

I have four-cylinder motor, the dimensions of which are 4 1-2x5 inches; have run about 2,500 miles; when I first got the machine I could start on compression, and this was true until some time ago. Now it is impossible to start motor that way; in fact, after standing for some little time have to prime the cylinders before I can start. Have adjusted the carbureter in every possible way, reducing the air and gasoline and increasing both, but all to no effect. The motor has good compression, and once under way runs excellently; answers quickly to the throttle and to the slightest advance of the spark lever, but when throttled down will miss explosions and occasionally stop. Can make about 16 miles on a gallon of gasoline, which is considered very good in such a hilly district as this. Can you help me out? A. CONRAD.

McKeesport, Pa.

In diagnosing the trouble you have experienced as set forth in your letter, it is necessary to treat of it as two separate and independent ailments, as it does not appear that the failure to start on compression has any connection with the fact that the motor will not run satisfactorily at slow speeds. And before taking up the first, it may be as well to explain that there is considerable misapprehension extant as to the requirements of starting on compression, as it is called. It is generally conceded that it is practically impossible to make joints sufficiently tight to hold a gas under high pressure for any considerable length of time and it is doubtful if there is an automobile motor on the market that will retain more than a fraction of its initial compression for more than 24 hours. This does not mean that the motor cannot be started from the seat after that time, as there are cases on record where a motor has been started in this manner after standing unused for a week or more, one such case being cited in these columns in the present issue (letter of F. S. T.), but it shows that the motor does not start *on compression*, contrary to the popular view. It does mean, however, that the cylinder about to fire has retained sufficient explosive mixture to ignite when the spark occurs, and as a mixture of gasoline vapor and air when exploded in a closed vessel without previous compression, generates a pressure that has been known to reach as high as 90 pounds per square inch, it will readily be evident that this is sufficient to start any well-balanced motor in good running order. One of two causes may be responsible for your present inability to start the motor by switching on the current without previously priming the cylinders. Either the valves and piston rings of the motor may have worn sufficiently to permit the escape of most of the gas or the surrounding temperature may have caused the condensation of the gas in the cylinder, this usually being the case in winter. The wear mentioned might be sufficient to permit the gas to leak away when thus standing and still not impair the compression of the motor sufficiently to make a perceptible difference in its working, owing to the fact that the film of lubricating oil that is formed is essential to good compression, and this film disappears when the motor stands idle for any length of time.

Carbureter trouble would appear to be the most likely cause of the second ailment, and the missing at slow speeds seems to indicate a mixture too rich in gasoline. It must be borne in mind, however, that the modern automobile motor is not designed to run at very slow speeds, and should not be expected to function regularly under 200 to 300 r. p. m.

A Question of Axle Design.

Editor THE AUTOMOBILE:

[756.]—Why is it that the front axles of automobiles are made heaviest and strongest at their ends, while rear axles are made stronger at their centers? I should think that the center would be the place for the strength in both axles, on account of the greatest strain being there. In all other structures, such as bridges, beams, and even the side members of automobile frames, the strength is placed at the middle; why not the same with a front axle? AMZIE GIFFORD.

Davenport, Ia.

Like many another criticism of standard automobile construction, yours comes from a misconception of conditions. An automobile front axle would need its greatest strength in the middle, as you suggest, if it were loaded at the middle and supported at the ends, as in the cases of the bridges, beams and frame members you cite. But, as a matter of fact, automobile front axles are supported at the ends and loaded—through the medium of the springs—at almost the same point. So the bending stresses due to load and road shock are not only much smaller than might appear, but are concentrated on the thickened ends of the axles. Were an axle loaded at the middle, the condition would be different, and then it would be sound engineering to use a beam construction with greatest strength in the middle. This has been the case with some old cars, and is the case now with the rear axles of propeller shaft-driven cars, which are loaded not alone with the vehicle, but also with the bevel gear drive and the differential.

Reaching Port with a Broken Chain.

Editor THE AUTOMOBILE:

[757.]—I have a car propelled with a double chain drive, and while on a short run a few days ago one of the chains pulled apart in such a manner that I was unable to fix it with any facilities afforded by the tool box. The result was that I finally had to have the car towed in, it proving impossible to drive it with one chain because the propelling effort was all absorbed in rotating the differential. I have since heard, though, that there is some way of tying parts of the mechanism so that the car can be run despite the missing chain. Will you please tell me if this is true, and, if so, how it can be done? E. A. KLING.

Sedalia, Mo.

By tying the countershaft sprocket over which the broken chain ran, so that the half of the countershaft to which it is attached cannot revolve, it is perfectly prac-

ticable to limp in on one chain with a car of the type you possess. To do so, however, especially if the distance be great, is to impose very heavy work on the differential, which is revolved under these conditions under heavier and more constant duty than any for which it is designed. A good precaution, to minimize possible trouble from this source, is to clean and lubricate the differential thoroughly before attempting the run. And it goes almost without saying that no high speed should be attempted. By all means the best plan is to secure a new chain, which will have the additional merit of impressing the desirability of carrying a spare one in the future.

A Propeller Shaft Breakdown.

Editor THE AUTOMOBILE:

[758.]—I am a driver of a small car possessed of propeller-shaft transmission to the rear axle. Several days ago I had the car out for a seventy-five-mile run, which I made in four and one-half hours over hilly country, but when within two miles of home I found myself in serious trouble. The car had been stopped for a few moments—up to which time it had seemed to run all right—and when I started up again for some reason the low gear refused to engage properly. I forced it, and the result was a lurch forward, followed by a grinding noise which continued as long as the engine ran, though the car stood still. I thought, of course, that the bevel gears had stripped, but an examination of them through a small opening in the case failed to disclose anything wrong. Nor does the change-speed gear seem injured. I now want to know what the matter is before I proceed further, for I fear that otherwise I may add to the trouble. J. K. FOOTE.

Middletown, N. Y.

Several important points that might help the diagnosis are missing from your enumeration of conditions. You fail to state whether the change-speed gear is of the planetary or sliding type, and you do not assure us that the propeller shaft is all right. If the propeller shaft is of the type that is enclosed throughout its length by a non-rotating housing, it seems altogether likely that the shaft itself is broken, probably with a more-or-less irregular fracture, so that the ends scrape together. Or perhaps the propeller shaft is broken out of the bevel pinion, or away from the shaft that drives it, by the shearing of some key. Mere inspection of the bevel drive through a small opening in the case does not seem to us sufficient assurance that the bevel pinion is not stripped, and we would suggest disassembling the car until the trouble is definitely found. No more damage than already exists can result from this, if it is done carefully. As near as we can judge, the accident seems to have occurred through too sudden engagement of the driving mechanism, perhaps on an up-grade or in heavy pulling. This could be caused either by too quick throwing in of the clutch or a "fierce" condition of the clutch surfaces, possibly due to a coating of dust accumulated during the long day's run.

MR. MILTOUN SAYS FRANCE GREETS TOURISTS.

Editor THE AUTOMOBILE:

[759.]—The writer would like to reply to the statement made by your unknown correspondent, No. 701—an American automobilist, living at Vernon Eure—that invading American automobilists will not be chivalrously received in France.

The French as a nation, so far as they are in touch with touring automobilists, hotel keepers, méchaniciens and the like, may be depended upon to do nothing to drive trade away—and it is a very considerable "trade" that the visiting automobilist does in France, by spending his money liberally in hotels and garages. There may be exceptions to this ideal class of tradesmen, doubtless there are, but the writer has not found more than a half dozen lonely examples in a round of French touring of many years, beginning with a DeDion tricycle and so on through the gamut of automobile things until he has arrived to a "real" touring car.

As for the menacing gendarmes, they only do their duty when they ask you for your "papiers," if by chance you have come to rest at some picturesque spot just as a brace of them stroll by. All automobilists look alike, begoggled and berugged, and they don't care a jot whether you are a Frenchman or a stranger so long as they can make a report to their brigadier that they caught up an automobilist this morning, "sans papiers" or whose "papiers" were not "en regle." Whose fault is that, not the gendarmes', surely!

Now for speed limit, when you come to a great, staring sign indicating that speed in a narrow-built, twisting Grande Rue of some hitherto unheard of little French town is, "by order of the Maire," reduced to ten kilometers an hour, it's wise to follow the warning—for many reasons.

The writer was recently an occupant of a high-powered car which bowled over a great shaggy "chien de berger" in a small town in Vancluse recently, and killed it, too, through no fault of the driver. This must have been so because a gendarme standing by said so.

We'd all like to have that $500 runabout of our dreams, and most of us won't care whether its American, French or German. It will be a good thing to have, but to expect France to draw her supplies of this class of vehicle, or any other, "tout entière" from America is indeed a beautiful dream.

Meantime American automobilists and American machines are increasing in numbers and favor in France; the former are very much liked and the latter are usually highly praised. So now! This is the point of view of another American automobilist living in France who signs himself. FRANCIS MILTOUN.

Moret-sur-Loing.

AFTERMATH OF THE HARRISBURG RUN.

Editor THE AUTOMOBILE:

[760.]—During the recent endurance run of the Motor Club of Harrisburg the speed ordinances were observed by the contestants, but there were plenty of grafters in the small towns and boroughs. Manheim, Lancaster County, had a very enthusiastic gentleman, who never owned an automobile but who got very busy and took the numbers of all he could, and the town is now reaping the benefit of $10 apiece from the contestants.

The fortunate thing for the operators is that each car had an observer, whose duty it was to record the speed of the car on which he was observer. This was done, and the Motor Club of Harrisburg promises a very exciting deal with the Manheim people as the outcome of the arrests.

Many of the towns along the way were wide open, and a great many suspended business in factories and stores while the contestants passed through, giving them a hearty welcome. It is no doubt best for a tourist passing through Manheim to leave his car on the outside of the borough limits and walk through with his numbers properly displayed in front and back of him, to avoid arrest. A CONTESTANT.

Philadelphia.

A TIP FOR DELAWARE WATER GAP TOURISTS.

Editor THE AUTOMOBILE:

[761.]—Herewith please find a clipping from the "Blairestown Press" which should be read by automobile tourists who have in mind visiting the famous Delaware Water Gap and the Pocono Mountain country. A SUBSCRIBER.

Portland, Pa.

From the "Blairestown Press": "The authorities at Portland are again active in watching for automobiles without a Pennsylvania license that cross the river from Columbia for the run to the Water Gap and up the Pike County road. Last summer the borough collected $300 in fines. On a recent evening an autoist crossed over to Portland, and Constable Pensyl, noticing that the machine did not carry the required license number, put the driver under arrest. He said he would stay over night at one of the hotels and then borrow enough money next morning to pay his fine. The constable went home and to bed. The automobile man also went to bed, but he did not sleep as soundly as the constable; anyhow, when the constable came around in the morning the tourist had hied himself over the river and back to Jersey."

TAKES MUCH INTEREST IN GOLD CUP TOUR.

Editor THE AUTOMOBILE:

[762.]—I am much interested in the American Gold Cup tour through Europe this season, and would like to have the names of the firms entering cars for the competition.

I recently made a report for the Department of Commerce and Labor concerning the tour, and the interest being taken in the event by European manufacturers and autoists. As a result of that report I have had a number of inquiries from interested parties concerning American cars, and requests for the names of those competing in the tour. I believe it will result in much new business for American manufacturers.

Lucerne, Switzerland. R. E. MANSFIELD, American Consul.

MORE ABOUT BATTERY CONSUMPTION WANTED.

Editor THE AUTOMOBILE:

[763.]—Not long ago numerous letters appeared in "The Automobile" on the subject of battery consumption, many of them bringing out some very interesting points to me—and I have no doubt to a great many other car users as well. From the tone of some of the letters I thought the subject was up for a thorough threshing out, but somehow or other it appears to have been sidetracked for some unknown reason. W. R.

New York City.

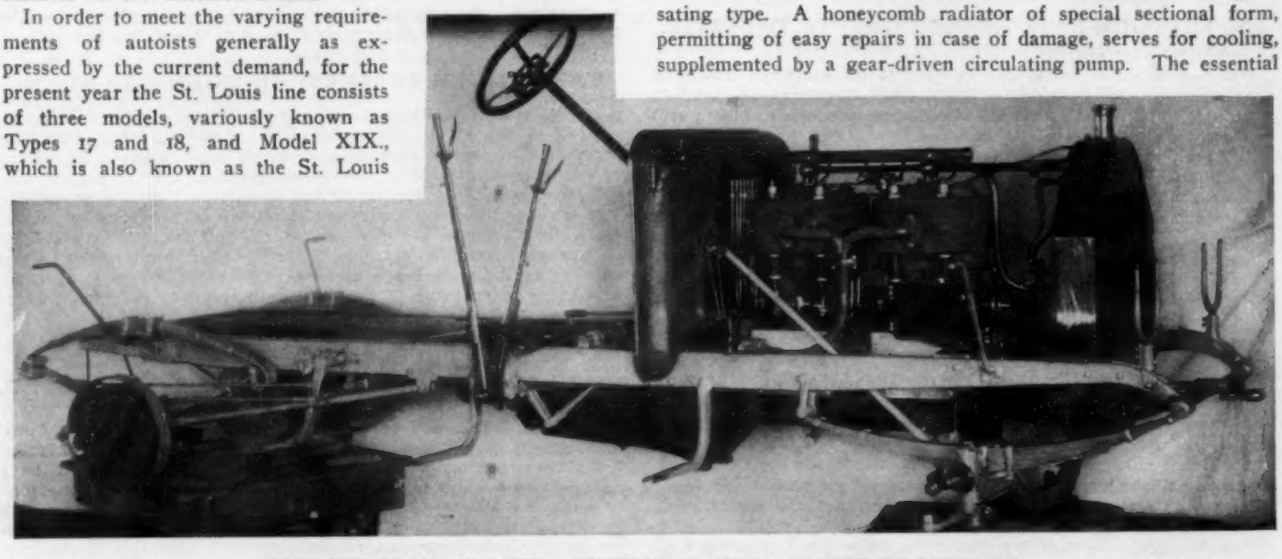
MODEL XIX, 50-HORSEPOWER ST. LOUIS TOURING CAR.

THE "St. Louis 50" has earned for itself an enviable position in the automobile world, and this distinction has come to the builders of "Rigs that Run," largely by their original and unique methods of construction. During the fourteen years the St. Louis Motor Car Company has built autos the aim has been to produce the best possible in construction and workmanship, and a careful study of the progress made shows how well this aim has been accomplished. Fourteen years ago this industry was given birth in a small shop of very crude nature (25x40 feet) in Nashville, Tenn., with John L. French as its originator and head. After many experiments, test trials, etc., the first rigs were placed on the market, and these models proved such a decided success that the company was encouraged to broaden out. The shop was increased from time to time until to-day the new factory at Peoria, Ill., covers a space of about two acres and a working space of 150,000 square feet, employing 350 men by day and 200 at night. In originating the much lauded integral system, three-point suspension and direct drive, the St. Louis is claimed to have been six years in advance of any other manufacturer in the automobile field.

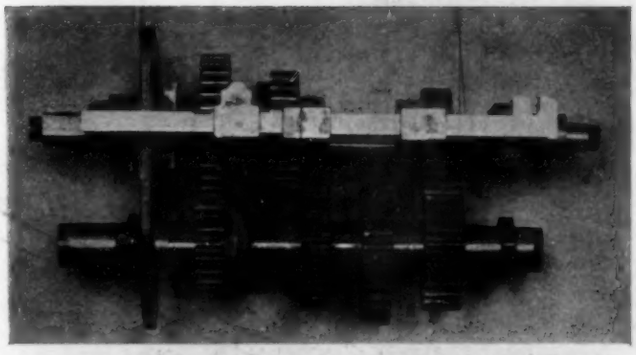
In order to meet the varying requirements of autoists generally as expressed by the current demand, for the present year the St. Louis line consists of three models, variously known as Types 17 and 18, and Model XIX., which is also known as the St. Louis heavy touring car. This car is equipped with a 50-horsepower motor of special design that is built from beginning to end in the home factories.

Motor Design.—The cylinders are cast in pairs with oppositely disposed valve pockets, all the valves being mechanically operated, while the reduction gears for the camshafts and the auxiliary driving mechanism are all enclosed in a neat aluminum housing. Particular attention has been paid to the matter of accessibility, to which end almost the entire sides of the crankcase are made to open by means of readily removable plates, exposing the crankshaft and connecting rod ends for inspection and adjustment. The crankshaft is of special steel, and is offset from the cylinder centers in order to minimize side thrust against the cylinder walls on the explosion stroke. The main bearings, which are of substantial dimensions, are of a specially alloyed bronze.

The motor accessories are of standard types throughout, ignition being of the high-tension type, using accumulators as the source of current, while the carbureter is of the automatic compensating type. A honeycomb radiator of special sectional form, permitting of easy repairs in case of damage, serves for cooling, supplemented by a gear-driven circulating pump. The essential



INLET SIDE OF THE ST. LOUIS 50-HORSEPOWER MOTOR, SHOWING ITS SIMPLICITY.



SUPERIMPOSED ARRANGEMENT OF GEAR-SET SHAFTS.

of lubrication is taken care of by means of a large supply tank placed on the forward side of the dash under the bonnet, communicating with a force-feed oil-pump, which passes the oil through a number of sight feeds on the dash.

Transmission.—In accordance with current practice on the highest grade cars, a multiple disk type of clutch is employed, in connection with a sliding pattern of change speed gear with selective operation. Final drive is by propeller shaft, the relation of the various essentials of the transmission from the motor to the rear axle being so designed that with the normal load aboard all are practically in line on the same plane, any slight differences due to inequalities of the road being compensated for by the universal joints in the cardan shaft.

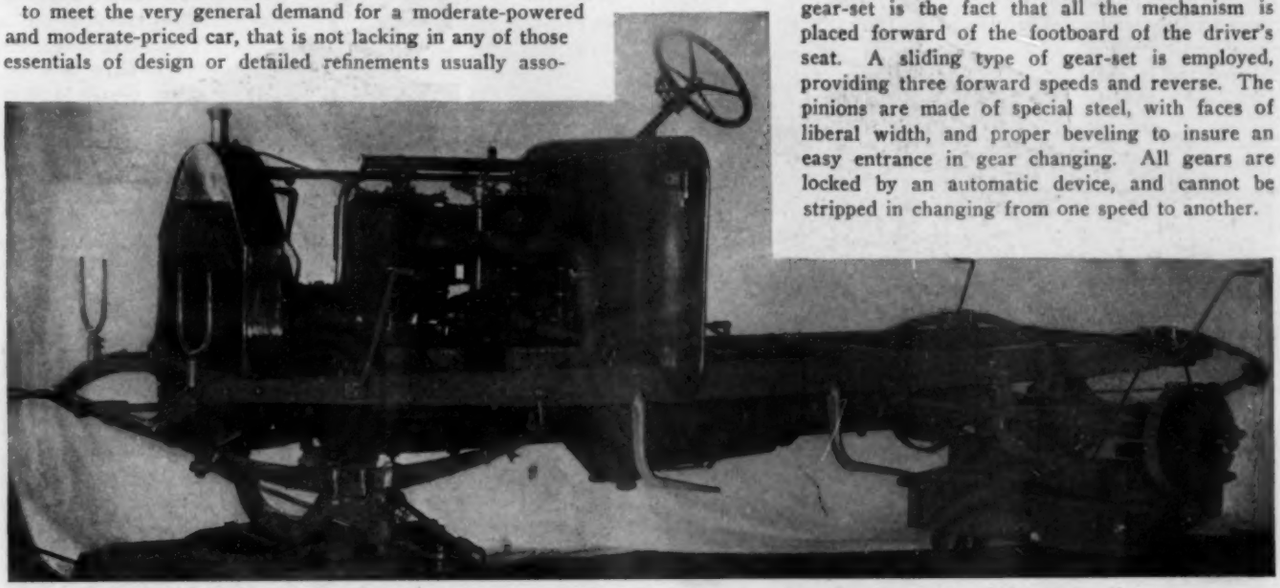
The frame is of the usual channel section pressed steel, supported on semi-elliptic springs forward and scroll elliptics in the rear, the spring dimensions being 2 inches wide by 40 inches long, each spring having 8 leaves. Thirty-four-inch wood wheels of the artillery pattern constitute the running gear and are shod with 34 by 4 1-2-inch tires of any standard make. Two sets of brakes are provided, both being centered in special drums on the driving wheels, and constituting a set of internal expanding and external contracting bands acting on the inner and outer faces of the drums, the usual method brake operation being employed. The body is designed along modern lines and is very roomy, having a seating capacity of seven with the addition of two extra revolving seats in the tonneau. All on, the car tips the scales at 2,600—a very moderate weight for its power.

Models 17 and 18.—The model 18 St. Louis has as its groundwork a 35-horsepower chassis, embodying all those features of modern design that distinguish the up-to-date car, and is intended to meet the very general demand for a moderate-powered and moderate-priced car, that is not lacking in any of those essentials of design or detailed refinements usually associated with very high-priced cars. Model 17 is the same chassis equipped with a runabout body designed along attractive lines.

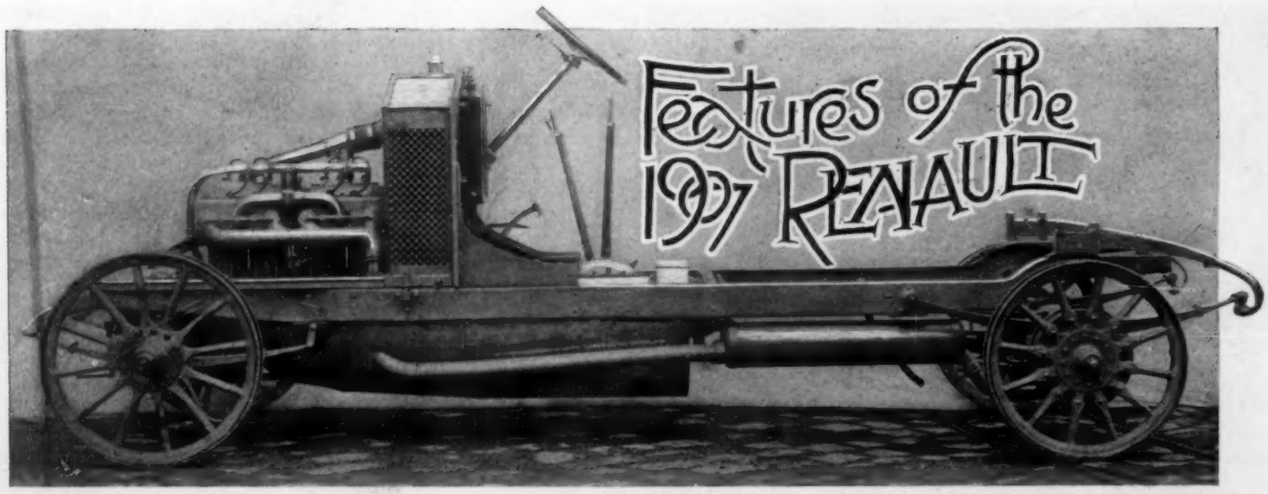
The power plant is of the unit type, in that the motor, clutch and change speed gear are housed together, the whole being supported on a three-point suspension, a feature of design which the builders of the St. Louis cars were among the first to take advantage of. The motor cylinders are cast in pairs, the valves all being placed on one side and operated from a single camshaft. The same degree of accessibility which characterizes the larger motor is also prominent in this, and every part is easy to get at. The ignition system is of the high-tension type, using accumulators, while lubrication is by means of a force-feed pump, combining the essentials of simplicity and reliability in the highest degree. Particular attention has been devoted to simplifying the ignition and piping connections, and the absence of unnecessary wiring or pipes is noticeable, while both the manifolds have been designed to be readily removable in half the usual time. The main bearings are accessible in a few seconds, as both the handhole covers may be removed by loosening a single bolt. The wheelbase of the car is 108 inches, and the tread is standard; with all on, the weight is 2,300 pounds.

SIMPLE DETAILS OF THE MULTIPLE-DISC CLUTCH.

One of the great advantages accruing from the use of the integral or unit form of construction for the power-plant and gear-set is the fact that all the mechanism is placed forward of the footboard of the driver's seat. A sliding type of gear-set is employed, providing three forward speeds and reverse. The pinions are made of special steel, with faces of liberal width, and proper beveling to insure an easy entrance in gear changing. All gears are locked by an automatic device, and cannot be stripped in changing from one speed to another.



CHASSIS OF THE "ST. LOUIS FIFTY" VIEWED FROM EXHAUST SIDE OF MOTOR.



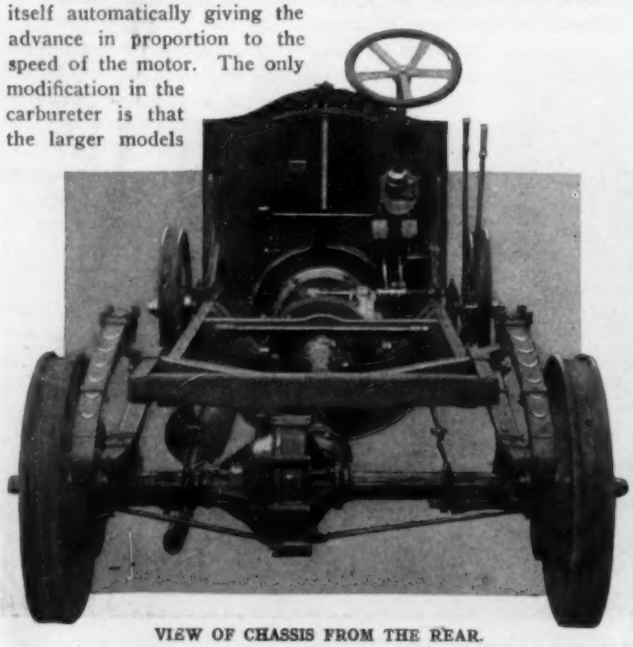
Features of the 1907 Renault

MECHANICALLY the 1907 Renault chassis has undergone few changes, all the features which contributed to make the output of the Billancourt factory such a huge success last year being retained, with a few modifications in detail, in the models which made their appearance in this country only a few days ago.

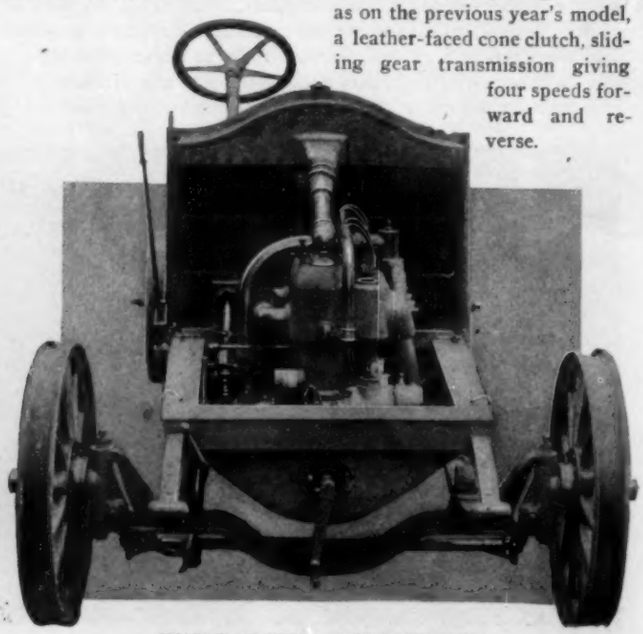
As will be seen from the illustration, the suspension of the two larger models, 35-45 horsepower and 20-30 horsepower, has been changed, three-quarter elliptic springs being now employed in place of the longitudinal and transverse rear spring. On the smaller models the older type of suspension is still retained.

The four cylinders are cast in pairs, the crankshaft has three bearings, and all valves are mechanically operated by a single shaft, with cams integral. The pistons of the 35-45 horsepower Renault have four rings, three on the upper part of the piston and one on the lower part, the latter serving to clean the cylinder walls of lubricating oil, consequently keeping the valves and plugs in best condition. Ignition is as last year, by high tension Simms Bosch magneto, placed at the front of the motor and driven off the camshaft, all the gears being completely enclosed within the crankcase. This year's magneto is rather smaller than that employed on previous models. There is no advance or retarding spark mechanism on the Renault models, the magneto itself automatically giving the advance in proportion to the speed of the motor. The only modification in the carbureter is that the larger models are now fitted with the small regulator on the dashboard, which has been a feature of the Renault cabs from their introduction, and by means of which the speed of the motor is regulated. The distinctive feature of the Renault system is that the mixture instead of being formed in the carbureter itself takes place in a chamber at the extremity of the intake pipes, and close to the inlet of the motor. The great advantage of this automatic carbureter over those generally employed consists in the fact that it is entirely metallic and does not comprise any membrane, piston or valve, the fragility of which is often a cause of annoyance. Engine control is unchanged by the modification to the carbureter, being, as before, by accelerator pedal and lever under the steering wheel.

Nothing is under pressure in the Renault, consequently there is a simplification of the motor unknown to most automobiles. If any further justification of the thermo-syphon system were needed it is found in the performance of the Renault car, which won last year's French Grand Prix, an event which, more than any other, tested the water-cooling systems of the motor. In addition to being exceedingly simple, the radiator against the dashboard gives the maximum of accessibility to the motor. A fan is combined with the flywheel and assures a constant passage of air around the vertical tubes. In the transmission everything remains as on the previous year's model, a leather-faced cone clutch, sliding gear transmission giving four speeds forward and reverse.



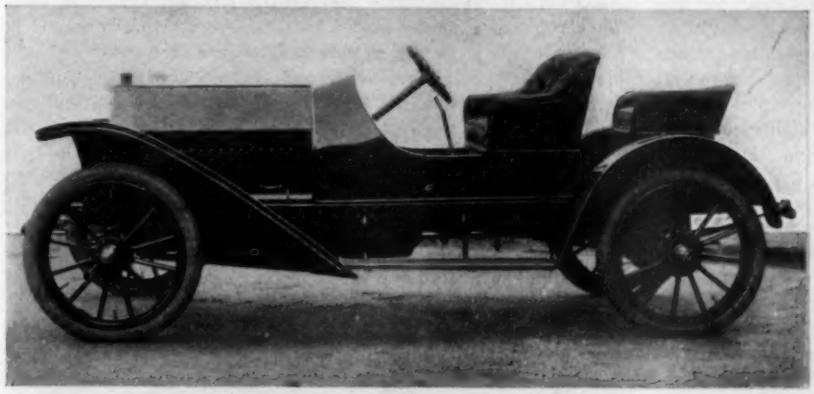
VIEW OF CHASSIS FROM THE REAR.



CHASSIS AS SEEN FROM FRONT END.

A NEWCOMER FROM THE WEST: THE C. F.

CHICAGO is coming along as an automobile manufacturing center, the latest car to claim the Windy City as its birthplace being the C. F., made by the Cornish-Friedberg Motor Car Company, 1233 Michigan avenue. This newcomer to the ranks of automobiles turned out in the middle west is designed to cater to the large demand for a car with a four-cylinder vertical engine



THE C. F. 30-HORSEPOWER TOURING RUNABOUT FOR 1907.

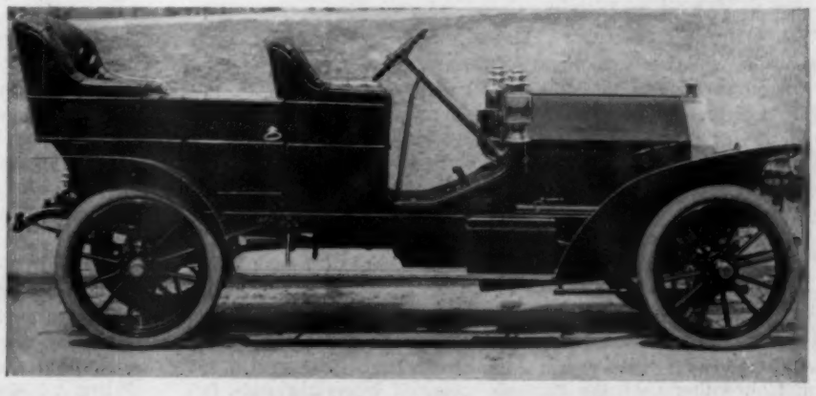
as well as numerous other features only to be found in the higher-priced cars, and is listed at the low figure of $1,750, complete. The motor cylinders are cast in pairs and their dimensions are 4 1-4-inch bore by 4 3-4-inch stroke, the motor developing 30 horsepower at a moderate normal speed. The cylinders are cast of special iron and the crankshaft is of nickel steel, somewhat of an innovation being found on the latter in the provision of oil rings on the main bearings. All the valves are placed on the same side of the motor and operated by a single camshaft, at the rear end of which it drives a vertical shaft through bevel gearing. The pump is located on the lower part of this shaft, while at its upper end it carries the ignition timer. All the reduction gears are completely encased in an aluminum housing. The lower half of the aluminum crankcase only serves as an oil-pan and is readily removable to permit of the inspection of the entire interior of the motor. In addition to the splash lubrication provided by the supply of oil in the crankcase, a mechanical force-feed oiler is used, with nine independent leads, insuring a positive supply of oil to all the important points as long as the motor is running. The oil passes through the multiple sight-feed tubes on the dash.

Ignition is by the high-tension system, employing a multiple-unit Splitdorf coil mounted on the dash, and a four-point roller contact timer, which, as already mentioned, is mounted vertically just forward of the dashboard, thus minimizing the amount of wire necessary. The regular equipment of the car includes a set of accumulators for service running and a set of dry cells as a reserve. The essential of cooling is taken care of by a fin tubular radiator, supplemented by a fan mounted on ball bearings, circulation being maintained by a gear-driven pump. Parsons white bronze is used for the engine bearings, which are unusually liberal-sized, the flywheel and main bearings measuring 5 inches in length, while the center bearing is 3 inches and the forward end bearing 3 7-32 inches. The entire engine is protected from beneath by a sheet-metal dust pan.

In order to render the car as simple and as nearly fool-proof as possible, a planetary type of change-speed gear is employed, providing two forward speeds and reverse. The pinions are all of specially hardened nickel-steel and care has been taken to render the gear as nearly noiseless as possible, even when working on the low or reverse. Final drive is propeller shaft, the latter being of special steel, 1 1-4 inches in diameter and provided with Blood Brothers universal joints at both the axle and transmission ends. The front axle is of tubular steel construction, roller bearings being employed on the front wheels and also on the rear axle and wheels. The groundwork of the chassis consists of the usual channel-section type of pressed steel frame supported at all four points by standard semi-elliptic springs of liberal dimensions. The wheels are hickory, of the artillery type, and carry 12 spokes in each wheel; they are 32 inches in diameter and are shod with 3 1-2-inch Diamond wrapped tread tires on Marsh quick detachable rims. Two independent sets of brakes are used, both being centered in drums on the driving wheels and both operated by pedals, so that there is only one side lever. The steering gear is of the irreversible type and is provided with ample bearing surface throughout to prevent rapid wear and consequent looseness. Throttle and ignition levers are mounted on a stationary quadrant placed over the steering wheel, the latter moving independently of the quadrant. The gasoline capacity is 20 gallons.

An attractive straight-line body with a seating capacity of five persons is used on the touring car, and a regulation type with jump seat on the runabout. The latter has a wheelbase of 108 inches on a standard tread, so that the rear seat of the tonneau is not only amply wide but there is also plenty of leg room for the passengers, something that is not always the case on the low-priced car. The standard finish is Brewster green, or red with black trim, but cars will be finished to specification when desired. The regular equipment consists of a pair of acetylene headlights and generator as well as oil side lamps and tail-light and a complete set of tools.

It will be apparent, both from the accompanying illustrations



THE C. F. TOURING CAR, CHICAGO'S NEWEST ENTRANT IN THE FIELD.

of the newcomer from the west, as well as the description given of the various parts of its power plant and chassis, that the effort to produce an up-to-date car to list at a very low figure has been unusually successful. Standard engineering practice has been followed throughout the design and construction, high-grade materials are employed and the general appearance of the car itself leaves nothing to be desired.

THE MODERN ART OF TREATING STEEL

By ALBERT E. SCHAFF, Manager Pope Motor Car Co.

THE advance in the art of automobile building cannot be better illustrated than by taking up one leading topic in reference to the manufacture of the new alloy steels, which has marked an epoch in the art in the past two years. But a few years ago the automobile manufacturer had available for his use only low-carbon steels, which have been considered, and are considered to-day by most manufacturers, as quite good for the purpose. These low carbon steels, ranging in carbon from twenty to forty-point, greatly simplify manufacturing operations, since they require almost no treatment in their handling. No special annealing would be necessary in the drop-forging after leaving the hammer, and they could be then machined at high speed, running as high as ninety feet per minute; and, if the part in question were a gear blank, after the cutting of the teeth, the gears could be case-hardened by the ordinary simple process without the aid and great care required when the pyrometer is brought into use.

The price of this steel generally ranged between two and four cents per pound. It will be seen from this that the total cost of material and the labor was comparatively small. The steel itself gave but very little range in treatment. Its tensile strength was neither lowered nor increased materially by any treatment that could be resorted to. Hence the manufacturer had little opportunity to exercise his skill in the nice engineering of the various parts to secure suitable strength.

Vastly Greater Cost of Alloyed Steels.

When we come to chrome-nickel steels, we find at once a material that lends itself to a wide variety of uses. Arriving at the plant in the raw, unannealed state, at a cost anywhere from 20 cents to $1.20, it will have to be annealed; and this process, conducted with but very little latitude in the degrees of heat, must be continued for some ninety hours, and as carefully cooled. It is then ready to be machined at a cutting speed of about thirty-five feet per minute. After machining, the piece goes to the hardening and tempering department, where it receives a series of careful treatments, varying according to the use to which the part is to be put.

To illustrate, two examples will be given; but, before doing so, it might be mentioned that chrome-nickel steel has a range of treatment which enables one to get from the same piece a tensile strength of only one hundred thousand pounds, with an immense deflective range, *i.e.*, by cutting the ultimate strength down, the piece is made so soft as to be able to bend almost double, like a hairpin, without breaking, thus making it suitable for places where vibration might attack and crystalize the metal. Or this same piece, if used in some place where immense resistance to torsion or direct shock is necessary, could be treated to give a strength of 250,000 or even 300,000 pounds tensile strength; but in the latter case it would be at the expense of the qualities just mentioned, and the metal would be hard and yielding, so that while it would stand an immense amount of stress in steady pull; on the other hand, if subjected to intense vibration, it might readily break—a characteristic to be avoided.

Of the two examples referred to above, we will take up the pivot-axle upon which the front wheels are mounted. Anyone will readily see that the safety of the occupants of a car depends not altogether upon the strength contained in certain parts, but upon its life. All metals are strong enough, as a general proposition, to resist the shock of an accident; still, most of them, if highly treated, will quickly succumb to the disintegrating strains of vibration. Therefore, a pivot-axle should be treated to give a low ultimate tensile strength with a low elastic limit in order that the metal should not be in such high tension as to be subject to attack by vibration. Automatically the metal is in a more mild condition and can be bent in a number of alternating directions before showing any damage to its fiber. Such a piece would naturally more readily bend than that which is treated for a higher tensile strength; but at the same time it would be safer to have the piece in a condition where it would bend than where it would break.

Painstaking Care Necessary in Every Operation.

To get the results above described in the pivot-axle, the steel, when received from the manufacturer, is very carefully forged at a very low heat, being struck an innumerable number of light blows, with the temperature range of only about one hundred degrees. This means quick cooling and constant reheating, and reduces drop-forging almost to a hand-forging process, with the advantage, however that the metal, by being formed in dies, is given a better shape. It is next annealed very carefully, and when machined it is reheated, hardened and tempered. The treatments vary considerably from those of transmission gears, as we are aiming to get a tensile strength of about 110,000 pounds to the square inch, with a large deflective movement. In all of these operations of heating, quenching and drawing, pyrometers must be used, as the variation must not exceed 30 degrees, and the temperature runs as high as 1,450 Fahrenheit, it will be seen how carefully these operations must be conducted to produce the exact results required.

We now come to example No. 2, the forging and treatment of transmission gears. In order that the modern automobile may be made to yield the greatest power per pound of car weight, all the details must be carefully studied or a very heavy car with heavy wear on the tires and all moving parts will result.

The transmission gear being subjected (with the modern disc clutch) to small shock and very heavy torque, having most of its strains come upon one, and at best not more than two teeth at a time, must be given a treatment that will yield a very high tensile strength of, say, 225,000 pounds to the square inch, with a corresponding increase in its elastic limit. Although the steel for this purpose might be exactly the same base as used for the pivot-axle just illustrated, still a treatment is given to yield 225,000 pounds tensile strength. Instead of the piece being capable of bending almost double without breaking, it would probably bend but few degrees before it would yield.

Different Treatment Required for Various Parts.

However, the conditions to be met are so different from the case of the pivot-axle that it is highly desirable to give it this treatment, since the part must be made to resist an immense amount of strain without yielding in the slightest degree. After it is machined and the teeth cut, the gear must be carefully treated so that it will not warp, as these high-class alloyed steels are much more sensitive in this respect; the treatments in number are about the same as for the pivot-axle, excepting that they are carried higher and drawn less. The amount of carbon in the steel itself is a determining factor, to an extent, as a variation of even two points would naturally lower or raise the number of degrees of heat to be applied in the various operations. An even greater degree of watchfulness would be necessary where a high treatment is to be given, in order to confine the temperature variations within the closest possible limit.

When it is remembered that in the high-class motor-car steels elaborate treatments have been resorted to to meet the varying conditions in the steel itself, it will be seen how complex the problem becomes by the adoption of these chrome-nickel steels, some of which come with 35-point carbon, some 50, and others but 40. The old form of guessing the proper heat by the eye and holding the piece in the dark and determining the temperature by the color must absolutely be discarded if success in their use is to be had, as success can only be obtained by the adoption of new methods and skilled help.

THE DEATH OF ALBERT CLEMENT.

A road accident, details of which the laconic cable messages from France fail to supply, has cost the life of one of the most brilliant of the world's racing drivers. Albert Clément was practicing on the Dieppe circuit on one of the six-cylinder racers which the firm constructed last autumn, when, in taking a curve at the village of St. Martin-en-Campagne, a few miles from Dieppe, the unfortunate accident occurred. Venus, who usually acts as mechanic for Clément, had been replaced by Gauderman, a close friend of the family, and a young racing driver of promise, who only entered the Bayard-Clément factory last year, and whose injuries are fortunately reported to be only slight. It would appear that a comparative test was being made of four and six-cylinder machines, for the firm has for some time been experimenting with six-cylinder engines, with the intention of putting a touring six on the market, and last fall built three powerful racers of this type, which have not yet been tested in any important event. The accident took place on the eve of the closing of the course to racing automobiles, the Automobile Club of France having sent forth an order that from the following day until three weeks prior to the race no machine should be allowed to travel over the circuit at more than twenty miles an hour, in order that the surface might not be spoiled.

ALBERT CLEMENT SHORTLY BEFORE HIS UNFORTUNATE END.

Albert Clément was the eldest son of Gustave Adolphe Clément, the head of the great Bayard-Clément factory at Levallois, near Paris, and Mezieres, in the Ardennes. The elder Clément, less than thirty years ago a modest mechanic and repair man, without wealth and with few material prospects, is to-day one of the richest men in France, and his son, had he lived, would have inherited a large fortune.

In the Ardennes circuit of 1904, Albert Clément made his first public appearance in an automobile race of any importance, when he captured first place with a voiturette from the parental factory. In the same year he created a sensation as the boy driver of the Vanderbilt race, in which event he lost first position to George Heath on a Panhard by less than two minutes. His performance was the talk of the race, for young Clément, then only nineteen years of age and of very youthful appearance, proved himself the equal of the most skilled automobile drivers of the world. The following year, in the French elimination trial for the Gordon Bennett contest, Albert Clément started fourth, but had to withdraw on the second round with a cracked cylinder. Owing to the imperfectly organized telegraphic service, no news of the young driver could be obtained for several hours, and it was only when Clément walked into the stand, having tramped over the mountainous country, that the anxiety of his parents and friends witnessing the race was relieved. In 1905 the Bayard-Clément team was not selected for the Vanderbilt contest; Albert Clément's public automobile performance consisted of a dead heat with Hanriot on a Darracq light-weight racer on the Gaillon Hill.

Last year Albert Clément finished sixth in the Ardennes race, third in the Grand Prix and fourth in the Vanderbilt Cup. His performance in the Grand Prix will be remembered as one of the most brilliant and fascinating automobile races the world has ever seen. At the end of the first day Szisz was first, Albert Clément second, and Nazzaro third, fifteen minutes behind the young Frenchman. For over six hours the young Italian and the young Frenchman raced neck-and-neck around the course, Nazzaro seeking to shake off the fifteen minutes lost on the first day, and Clément doing his utmost to keep his rival in third place. None who witnessed it will forget the scene at the commencement of the last round but one. In his excitement Albert Clément overshot the gasoline station, and had to come back on reverse gear. Nazzaro was only a minute behind. Filling the gasoline tank by the ordinary feed pipe was too slow, and Albert yelled for the big cans to be handed over to him. One by one he emptied them into his tank, spilling the dangerous fuel over the car with the recklessness of a man who has reached the point when he must abandon all reserve. Never was a car loaded up with such rapidity, the youthful driver and his diminutive mechanic, Venus, displaying strength and agility that one would never have credited them with. At the commencement of the last round the Italian rushed by the grand stand only one minute behind Clément, and succeeded in capturing second position by a little over three minutes. Had Clément not persisted in his objection against dismountable rims he would in all probability have won the race.

At the time of his death Albert Clément was undergoing his three years' military service, from which he would have been released after the maneuvers of this summer. He was stationed at Vincennes, near Paris, and had obtained three days' leave to practice on the Dieppe course. Only a few weeks ago he had been refused leave of absence for the Targa Florio, and had very sorrowfully to abandon his place to his friend, Gauderman. In character, Albert Clément bore a close resemblance to his father, often spoken of as "the automobile king of France." Of a somewhat retiring disposition, quiet and thoughtful, there was under the unemotional exterior not usually associated with the French character, a genial nature, a ready wit and a strong individuality which won for him friends on every hand. Albert Clément is survived by a younger brother and two sisters, the younger of whom was married a few weeks ago to Ferdinand Charron, head of the C. G. V. firm, and also a successful competitor in early international automobile races.

MOTOR TRACTION IN GERMANY.

In the *Archiv fur Eisenbahnwesen*, Vellguth has published a careful study of the costs of automobile traction. As regards the omnibus service in towns, he comes substantially to the same conclusions as did E. Manville in his discourse before the Automobile Club; but he is more pessimistic, says *Engineering*. In Germany, motor-omnibuses, he thinks, could hardly pay their way in towns of less than two million inhabitants, which means that Berlin alone could reckon upon such a service. Vellguth would not appear to make sufficient allowance for general and technical development, however. The cost of building the cars, of oil, tires, and working expenses will be diminished with increased number of vehicles, and longer experience will enable us to construct cars of longer life. As regards the omnibus service on the high roads, Velguth may be more right in his verdict. One of the lines he deals with has a length of more than thirty miles; this Partenkirchen line is worked only in summer, however. On the whole, a light railway, driven by benzene motor cars, would be more promising than the omnibus, which transports only passengers, not goods. Vellguth gives a detailed estimate for the construction and working of a light railway of twelve kilometers (7.5 miles) length. Such a line would probably be more useful for agricultural and industrial districts than a mere passenger conveyance.

GRAND PRIX PREPARATIONS UP-TO-DATE.

PARIS, May 13.—Building operations have begun on the grand stands for the Grand Prix, and will be pushed forward with considerable activity. In order that the road surface may not be ruined by the rapid passage of racing machines and fast touring cars, the Sporting Commission has taken stringent measures. From Saturday next none of the racers engaged in the Grand Prix will be allowed on the course under penalty of disqualification, and the speed limit of eighteen miles an hour in open country will be rigorously applied to all touring cars. Three weeks before the race the course will be again opened to racers between 4 and 6 A.M. only. Racing drivers are taking advantage of the last days of liberty, and hardly an hour passes in the forenoon without the passage of some flyer at top speed. Le Blon has just come up from Nice on a 100-horsepower Panhard with Sider resilient wheels, which it is rumored will possibly be used in the race. Heath is out on his 1907 Panhard. Wagner, Lamberjack and Zedel are exploring the circuit on a Fiat touring machine, and Garcet is training with a new Bayard-Clément racer.

Speculation is rife as to the make-up of the Darracq team in the Grand Prix, as the result of the departure of Wagner. No official announcement has been made by the firm, but it is exceedingly probable that the machines will be handled by Hanriot and Demogeot, and that Caillois, who was to have steered a Commission Sportive racer, will take the place of Wagner on one of the more powerful machines. Rigal, who piloted a Berliet in the Targa Florio, will take the place vacated by Caillois.

In anticipation of an inrush of English visitors for the Grand Prix, a special agent of the *Service des Mines*, has been appointed at Dieppe to hold examinations and grant driving licenses to foreign visitors with the least possible delay.

FRENCH CLUB'S TOURING CONTEST UNITES 26.

PARIS, May 14.—Twenty-six machines are engaged in the only touring competition organized directly by the Automobile Club of France this year, under the double title of the Criterium of France and the Press Cup. The former is a touring event pure and simple, serving to eliminate machines for the final speed test to be run on a circuit near Trouville, with a limited fuel allowance. For one month more engagement may be sent in at double fees, but it is not likely that many firms will avail themselves of the privilege. Twenty-six cars are sufficient to assure the success of the contest, but are not sufficient to give to the event all the importance its promoters had hoped to secure for it. The complete list of entrants at ordinary fees is as follows:

1. Gladiator.
2. Gladiator.
3. Unic.
4. Peugeot.
5. Peugeot.
6. Peugeot.
7. Mercedes.
8. Mercedes.
9. De Dion-Bouton.
10. De Dion-Bouton.
11. De Dion-Bouton
12. Vinot & Deguingand
13. Germain Chainless.
14. Germain Chainless.
15. Lorraine-Dietrich.
16. Gobron-Brillié.
17. Aries.
18. Aries.
19. Cottin & Desgouttes.
20. Cottin & Desgouttes.
21. Cottin & Desgouttes.
22. Proudhomme.
23. Cornilleau & Sainte-Beuve.
24. Cornilleau & Sainte-Beuve.
25. Cornilleau & Saint-Beuve.
26. Argyll Motors, Limited.

FRENCH ROUND-THE-WORLD AUTO SHOW.

PARIS, May 12.—There seems every possibility of the French floating automobile exhibition being carried through to a successful issue. The suggestion was made a few months ago that a large steamship should be fitted up with a representative collection of French automobiles and parts and sent on a voyage round the world, calling at all the important ports, and staying at each from one to eight days, according to the possibilities of doing business. The device adopted by the organizers of the scheme was to visit the largest number of important ports in the shortest possible time. The cooperation of the French consul in each port visited will of course be secured, and a considerable amount of advertising done prior to and during the stay of the floating exhibition. Starting from Marseilles on a date yet to be fixed, the vessel will pass over to Algiers, call at Lisbon, then cross the Atlantic for Montreal, where a stay of six days will be made; Quebec will be given a three days' visit and Halifax may examine French automobiles for two days. American seaports to be visited are Boston, New York, Philadelphia, Baltimore, New Orleans and Galveston, New York being accorded eight days. Thirteen South American ports will receive a visit from the exhibition ship; two on the Pacific coast of North America; three in Japan; two in China; three in French Indo-China; three in British Indo-China; five in Australia; four in India, and finally Port Said, Alexandria, Tunis, and Marseilles. Altogether, fifty-four of the most important ports of the world will be visited. The length of the cruise will be from sixteen to eighteen months, exhibitions alone being responsible for not less than 240 days. If it is considered necessary in the interests of trade the stay will be extended, or new calling points will be added to the list.

TWO-CYCLE OFFICIAL TESTS IN FRANCE.

PARIS, May 13.—Up to the present very little attention has been given by French automobile constructors to two-cycle motors, no engine of this type being sold in France in appreciable quantities. To encourage the development of the two-cycle engine, the Automobile Club of France has authorized the Technical Commission to hold a competition open to both French and foreign two-cycle motors, using any kind of fuel. The competition will take place in the club laboratory in October next, but engagements must be made and a complete description of the machine given, in French, not later than July 31. Entry fee is $20 per motor. All engines must develop not less than eight, nor more than 24 horsepower, and angular speed of the motor must not be less than 800 nor more than 1,500 revolutions per minute at maximum power. The competition will comprise a six hours' test at full charge, a three hours' test at half charge, and a three hours' test without load, the motor running at the same speed as when under full load. One day will be allowed for fixing the motor on the testing blocks, the second day can be spent in preliminary tests, the third day they must undergo the six hours' test, the two other tests being taken on the following consecutive days. Awards will be based on the power developed and on the cost of fuel consumed per horsepower-hour corresponding to the maximum of power. One hundred points will be awarded to the motor having the lowest consumption per horsepower-hour, and the same number of points to the motor developing the greatest proportion of power, the others receiving a number of points in degressive proportion.

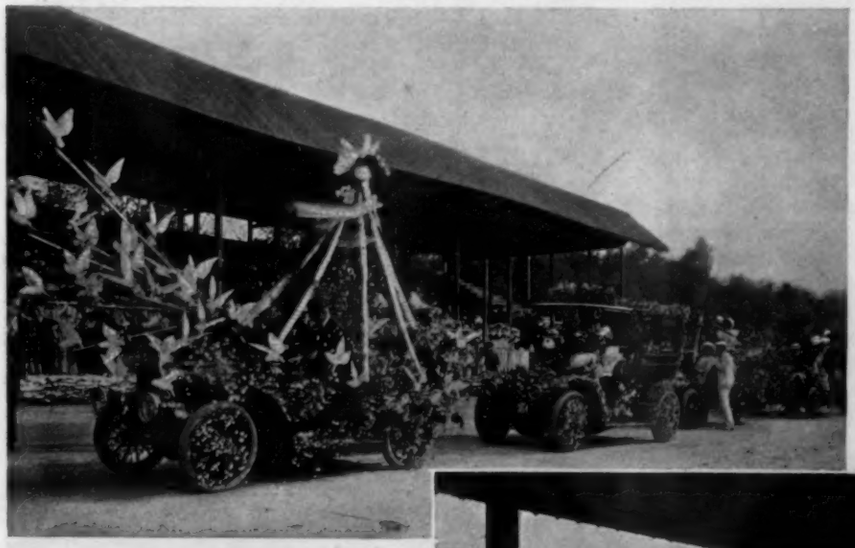
FRENCH CLUB PROHIBITS SPEEDING.

PARIS, May 14.—Twenty-eight hours fourteen minutes is the record time in which the 1,500 kilometers separating Paris from Madrid have been covered by automobile. Sorel, an Anglo-Indian driver of much experience in racing events, established the record on a Lorraine-Dietrich, the start being made from near the Porte Maillot, Paris, and the finish in front of the Royal Automobile Club at Madrid. The average speed was 34 miles an hour, a marvellous record for such a distance.

This will be the last of the many attempts that have been made by automobile manufacturers during the last few weeks to establish record runs across France on unprotected roads. The Automobile Club of France having decided to take severe measures against firms indulging in such runs. Prohibition was imposed on the request of the British Automobile Club, English firms having been very active lately in making fast runs from London to Monte Carlo for advertising purposes. Generally the machines left London in the morning, crossed the Channel by a fast boat, and rushed from one end of France to the other at a speed which would not have been tolerated in the British Isles.

AUTOS SHOWED A LA HORSE FOR BLUE RIBBONS

PHILADELPHIA, May 20.—Fashionable Philadelphia must be given credit for having discovered and carried through to a successful conclusion a new wrinkle—an automobile carnival on the well-known lines of the horse show. As the prospectus of the affair put it, the show's object was "to bring to the attention of the trade and the thousands of automobile owners in Philadelphia in a practical manner and assist in bringing about the adoption of certain styles of carrosserie and appointments for specific purposes and aid in determining a basis of what is and what is not necessary and in good form."



THE INVITING FLORAL BRIGADE.

It was to see this theory demonstrated that possibly three thousand local automobile enthusiasts assembled at the Belmont Driving Park, Saturday afternoon, and patiently sat through a much-too-long program of events in which speed was a negligible quantity, and in which "appearance, appointments, and suitability for the work designated" were everything.

And the bold innovation was voted a success! True, the scions of aristocracy who conducted the carnival started operations over an hour behind the appointed time, and forgot lots of necessary trimmings. But "everybody" was there, and paid good money to be there. Everybody who could help was asked to help, for the object was a charitable one—to raise much-needed funds for the Pennsylvania Epileptic Hospital and Colony Farm. Result: Upwards of $5,000 net for the worthy charity!

Such a gathering of the Quaker automobile clan was never before seen. Besides the more than 150 contesting cars—there were 220 individual entries—the incoming machines became so numerous that the paddock, the infield, and the backstretch were perforce used for parking purposes—at $2 per. Really, the scene out-Wissahickoned Wissahickon at its Horse Show best. And the day was of the kind which permitted the display of new gowns without fear of buttings in on the part of J. Pluvius. The air was so balmy that the filmiest confections went.

The judges, with a swarm of two score "stewards," who stewarded not, to add éclat to the occasion (like the vice-presidents at a political meeting) finally began to throw off decisions in vast numbers. The program called for about ten minutes' work on each class. The majority of the twenty classes took considerably longer, so that at 6 o'clock the officials were awarding ribbons in the class scheduled for 4:35. When, at 7:25, there was still one class to go—owners' electrics—and the grandstand was almost empty, the officials held a short council of war and decided to call it a day's work—and it was a hard one, too.

There are possibilities in the new game—undoubted possibilities. The eagerness with which contestants and spectators awaited the judges' decisions indicated that. Manufacturers' representatives and newspaper men were keeping tabs on the rising scores of their favorites and registering quiet kicks at adverse rulings, all of which goes to show that there was no lack of interest. The next affair of the kind—and the promoters aver that there will be another next year—will benefit by the experience of the promoters of this one. Things will go smoother.

THE COURSE AS IT LOOKED FROM THE CAPACIOUS GRANDSTAND.

Aside from the Stoddard-Dayton in the runabout classes, and the Packard in the touring car section, no one car made a decided hit. The Stearns did get three blue ribbons, it is true, but nothing else, while the Pierce Arrow gathered ribbons in nine events, as did the Packard, but the latter had four blues among its plunder. The Stoddard-Dayton really was the hit of the show, getting inside of the money no less than eleven times—three blues, four reds, one orange, and three white ribbons. The Baker made nearly a clean sweep in the electric class, while the Mercedes led the foreign cars.

Miss Frances C. Griscom registered a double win in the ladies' obstacle and ladies' time races. Many a paid chauffeur could learn car kinks from that young lady, who can make her Royal Tourist do everything but talk. The only other lady to win a first in the various classes was Mrs. George M. Costello in her Stoddard-Dayton, which cleaned up a big field in the under $2,500 runabout class.

The automobile "show" is a fixture.

The Score for the Afternoon.

The newspaper men present endeavored to arrive at a comparison of the afternoon's results by scoring points as in the intercollegiate championships—5 for firsts, 3 for seconds, 2 for thirds, and 1 for fourths. On this basis the results of the contests figure out as follows:

Cars.	1sts.	2ds.	3ds.	4ths.	Total Points.
Stoddard Dayton	3	4	1	3	32
Packard	4	3	1	1	32
Pierce Arrow	1	2	4	2	21
Stearns	3	.	.	.	15
Pennsylvania	2	.	1	.	12
Royal Tourist	2	.	.	.	10
Locomobile	1	1	.	2	10
Mercedes	1	.	1	2	9
Baker electric	1	1	.	.	8
Thomas	.	1	2	.	7
Oldsmobile	.	2	.	.	6
Autocar	.	1	1	1	6
Simplex	1	.	.	.	5
Winton	.	.	2	.	4
White	.	.	1	1	3
Ford	.	.	1	1	3
Pullman	.	1	.	.	3
Renault	.	1	.	.	3
Pope-Toledo	.	1	.	.	3
Rochet et Schneider.	.	1	.	.	3
Acme	.	.	1	.	2
Reo	.	.	1	.	2
Columbus electric ...	.	.	1	.	2
Panhard	.	.	1	.	2
Dragon	.	.	.	1	1
Mora	.	.	.	1	1
Walter	.	.	.	1	1
Berliet	.	.	.	1	1

A. L. A. M. ANNOUNCES EDUCATIVE SCHEME.

A big scheme is on foot at the offices of the Association of Licensed Automobile Manufacturers to organize a library and central clearing house, where information on every phase of the automobile industry throughout the world will be available for ready reference. Every known automobile and engineering publication in America and Europe has been subscribed for and will be kept permanently on reference in the club library. Each week the contents of every magazine will be indexed and cross indexed in such a manner that a person desiring information on any given subject having been treated in magazines or newspapers will find it readily to hand. All articles of interest in the foreign publications will be translated into English and a summary of the world's automobile literature will be compiled and published in a weekly review which the Association intends to produce at an early date. The magazine, which will be supplied to all members of the A. L. A. M., will give condensed reports of articles of interest, with reference to the periodical in which the matter originally appeared, in order that those interested may readily obtain more detailed information when desired. H. T. Clinton informed THE AUTOMOBILE representative that a couple of editors would be appointed to take charge of the library and the magazine, and that a competent staff of translators would be set to work at an early date. The new department will be under the supervision of Coker F. Clarkson.

BALTIMORE'S CLUB WILL INVESTIGATE.

BALTIMORE, May 20.—The Automobile Club of Maryland has started a rigid investigation into the methods used by the country police in ascertaining the rate of speed of the automobiles. The investigation was the outcome of several complaints made by citizens who claim that they were unjustly arrested in the county on the charge of unlawfully speeding their automobiles. Advertisements have been inserted in the local papers requesting all who have been arrested in the county to make a full report of the circumstances attending their arrest.

CONCISE, SIMPLE RULES FOR 200-MILE RUN.

In formulating regulations for the 200-mile endurance run of the New York Motor Club, to be held June 6, the committee in charge, of which R. H. Johnston is chairman, has taken considerable pains to make the rules as simple and as concise as possible, omitting all unnecessary provisions. It has been found by experience that the numerous superfluous provisions usually inserted in such schedules only result in confusing the observers and checkers, as well as the entrants themselves. The contestants will be required to cover the distance according to a definite time schedule, an observer being assigned to each car in order to take note of all adjustments, repairs and replacements.

The start is to be made from Columbus Circle, New York City, the usual route along the river being followed northward as far as Poughkeepsie, where a turn to the right will be taken through Amenia, Lakeville, Great Barrington and Lenox to Pittsfield, Mass. At this point the route practically doubles back on itself until Chatham is reached, where it again turns northward to Albany, the distance being slightly in excess of 200 miles. A pilot car will precede the run, distributing confetti.

The cars will be divided into two general classes, denominated A and B, the former consisting of touring cars, and the latter

SOME PICTURESQUE SCENERY IN THE BERKSHIRES.

runabouts, or, as the rule states, "having a seating capacity for two or three persons." All cars must be regular stock patterns, and a catalogue describing the type of car to be entered must accompany each entry. The entry fee will be $25 for each car, and the lists will be held open at the office of Chairman Johnston at 1402 Broadway until the evening of June 3. In order to determine the order of starting a drawing will be held as soon as all the entries are in. Each entrant is to nominate an observer.

Instead of converting the run into a race right from the start, a car that loses time between controls will not have to make it up between subsequent controls, but will have its time of leaving the next checking point advanced according to the amount of time lost and continue according to the same schedule of running, but with the new time.

Rule 7, which covers the matter of penalties for repairs, replacements and adjustments, provides as follows:

Rule 7. Penalties.—Each observer shall keep a written record of all adjustments, repairs and replacements made on the car in which he is riding, and the exact time so spent. A penalty of two points shall be inflicted for each minute or fraction thereof spent in making adjustments, repairs or replacements. No penalty shall be inflicted for work of any kind done on tires, but the time spent in tire repairs shall not be deducted from the running time allowed between the various controls. Contestants will be allowed, without penalization, to fill with water, gasoline and lubricant, to turn up grease cups and to oil the machinery, but everything else done on the car, aside from the normal operations of starting and of operating, shall involve penalties as above stated.

The start will be made at 6 A.M., and the running time provides for the arrival of the first car at Albany about 5 P.M., so that there will be ample time for all of the contestants to finish before the leaving of the night boat for New York.

SPRING DOINGS AMONG THE AUTO CLUBS

Chicago Clubs Working with Trade for Orphans' Day.

CHICAGO, May 20.—With the combined force of the Chicago Automobile Trade Association, Chicago Automobile Club and Chicago Motor Club exerted to make the event an unqualified success, motorists predict that orphans' day, June 12, will be a memorable occasion. The chairman of the committees representing the three organizations have already met to compare notes and arrange for a general meeting of their committees.

Joseph F. Gunther of the Chicago Automobile Club, L. J. Ollier of the Chicago Motor Club, and Walter Githens of the Chicago Automobile Trade Association, found on discussing the plans which they had outlined individually that they were in practical unanimity as to the course to be pursued. The field will be carefully laid out, they said, so as to take in every institution of the city in which parentless lads and lasses abide, and, after a trip from some central point that will take in the different institutions, the route will be laid out by the most direct course to some amusement garden, where the youngsters will be stuffed with peanuts and candy.

Local preparations include the appointment of a committee by the Chicago Automobile Club, which will have entire charge of the entertainment of the guests so far as the Chicago Automobile Club is concerned. Charles E. Gregory is chairman of this committee, and his associates are C. A. Coey and Joseph F. Gunther. At the same time as these appointments were made the board of directors of the Chicago Automobile Club decided to apply for a sanction for a race meet on July 13, the Saturday the Gliddenites are in the city.

It also was reported to the directors that the recent spell of wet weather has upset the calculations of the contractors, and that it will be impossible to have the new home in Plymouth court ready for occupancy by May 30, the date set some time ago. Instead, the opening will take place some time between June 1 and 15. The wet weather would not permit the plaster to dry, it is said; hence the delay.

Tennesseeans Reorganize and Elect Officers.

MEMPHIS, TENN., May 19.—Matters of much importance to local automobiling were transacted at the recent annual meeting of the Memphis Automobile Club. The club was practically reorganized along lines that will better insure the safety of pedestrians, and in like manner the drivers of cars and other vehicles. Rules and regulations were passed, such as will proscribe the reckless members to carefulness and legitimate use of the machines. A reasonable speed limit was set. Under the rules adopted by the club the members will be required to conform to the State and city ordinances. The result of the election of officers for the ensuing year was as follows: President, S. T. Carnes; vice-president, S. B. Anderson; secretary, C. S. Williams; treasurer, J. H. Stewart.

Activities of the Automobile Club of Kansas City.

KANSAS CITY, MO., May 20.—With a membership of nearly 100, the Automobile Club of Kansas City, of which W. W. Cowen is the president, and E. J. McNamara secretary and treasurer, is preparing for a busy season. A hill-climbing contest is scheduled for May 30; a club run will be made to Lexington the first pleasant Sunday in June, and on June 12, following the suggestion of the A. A. A. Board of Directors, the club will conduct an Orphans' Day. A race meet is to be the fixture for July 4. The club is an active member of the Missouri State Association of the national organization, and its influence is very substantial. The backward spring has somewhat subdued automobile enthusiasm, the weather having been cold, rainy, and altogether the worst for this time of year experienced in Missouri for many years.

Why Worcester Club Will Not Hold an Economy Run.

WORCESTER, MASS., May 20.—Worcester Automobile Club will have no economy run this spring. This was decided at a meeting of the board of governors Saturday night. Chairman Frank L. Murdock, of the special committee in charge of the plans for a run on the economy and endurance basis reported the plan as feasible, but the board decided there was not enough unoccupied time. The board considered the events at Readville and Wilkes-Barre, May 30; the New York Motor Club's run, June 6; Orphans' day, June 12, and other events scheduled to come between the present time and the start of the A. A. A. tour, and, in addition, took account of the Old Home carnival in Worcester, June 17-20, which will take up the time and attention of many of the clubmen, and decided to call off the run for the present.

The Worcester club has held gymkhanas each year for the past two years, This year there is a prospect there will be a gymkhana on a larger scale. Plans are being talked of which will result in teams from the Worcester club, the Bay State Automobile Association and the Rhode Island Automobile Club, of Providence, competing in gymkhana stunts in each of the three cities represented by the clubs. The winners will be figured out when all three events have been had and their scores tabulated.

At the meeting of the board of governors, Saturday night, Chief David A. Matthews, of the Worcester police department, was elected an honorary member of the club.

New Jersey A. & M. Club Committees Appointed.

NEWARK, N. J., May 20.—At a meeting of the board of governors of the New Jersey Automobile and Motor Club, held last week, the following committees were elected to serve the ensuing year:

House—Joseph H. Wood, L. T. Wiss, Dr. James R. English, W. C. Shanley, J. M. Byrne, C. W. Oathout, J. H. Dawson, H. T. Meyer, C. W. Baker, Theodore Mertz, F. A. Croselmire.

Legal—W. F. Kimber, J. H. Wood, James R. English.

Membership—P. E. Heller, G. H. Simonds, C. A. Westervelt.

Legislative—W. C. Crosby, Dr. H. Crittendon Harris, R. C Jenkinson, Arthur Heller, G. E. Long.

Race—W. C. Shanley, J. W. Mason, H. B. Niblette.

Good Roads—J. H. Wood, W. J. Morgan, H. P. Cook.

An Excellent Plan of Holding Club Runs.

BROOKLYN, N. Y., May 20.—The Runs and Tours Committee of the Long Island Automobile Club has adopted an excellent plan for the holding of its club run. A rendezvous is appointed to be reached for dinner at a specified hour, and it is up to the participants to reach the place leisurely or do some traveling at the limit of legal speed. The committee consists of Charles Jerome Edwards, James Edward Bristol, and William Schimps. Yesterday's rendezvous was at the Hotel Gramatan, Bronxville. In announcing its runs the committee gives the exact route on a postal card. May 25 and 26 there will be a two-days' run to the Shinnecock Inn, Shinnecock Hills, L. I.

Seattle's Club to Have a Floral Parade.

SEATTLE, May 20.—Opening with a floral parade in the morning, there will be two days of racing at the Meadows, May 30 and 31. The parade will unquestionably be the finest that has taken place on the North Pacific Coast. The Automobile Association is working hard, and, as there are so many new cars here this spring, the interest is naturally great. There will be no trouble about the floral part of it, as all sorts of flowers, domestic and tame, are now in bloom. The receipts will be used towards building an automobile boulevard, which in time will extend around Lake Washington, a drive of 135 miles.

THE AUTOMOBILE

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The Many Who Suffer for Sins of the Few. The many answering for the sins of the few is becoming too much for law-abiding autoists, and a letter from the Runs and Tours Committee of the Long Island Automobile Club is well worth perusal and duplicating by clubs in sections where the technical trapping of autoists is being carried to an extreme. Here is what the Long Islanders say to their members:

"To the Club Members—The Board of Governors has directed this committee to exert every effort in order to protect Long Island automobilists from the unjust, if not unlawful, methods which have been followed by local constables at some points, and the prosecution of autoists on purely technical grounds. The committee is also conferring with the president and board of trustees of each incorporated village on Long Island, with a view to having the corporation limits of each village fixed and properly designated by signs.

"While the club has little sympathy for the persistent violator of speed ordinances, or the reckless driver, whose fad is to hit up a 35 to 50-mile gait on the country highways, on the contrary we know that great injustice is done to the average autoist who is a careful and moderate driver, who may innocently exceed the regulations and thus be made the victim of some local constable, or police trap.

"This committee especially urges that each member report to the chairman by letter, regarding any police traps which come under his observation. By this is meant the stationing of constables, with ropes, cables, etc., to make arrests at the extreme limit of village boundaries, where it is practically farming country.

"I trust you will co-operate regarding such conditions that come under your attention, as it is the purpose of the club to locate men at such points in order to warn automobilists and protect them against such unfair methods. Yours fraternally,

"CHAS. JEROME EDWARDS, Chairman."

Autoists who drive to the danger of other users of the road should be arrested and fined, but to set traps in out-of-the-way places, in the outskirts of cities and towns, is a plan of procedure never intended by the framers of the law. It is doubtful, however, if the present wave of "trapping" will cease until the law has been changed in such a manner as to make impossible this form of graft, for country constables are multiplying faster than communities are beginning to realize the difference between catching violators of the rights of other users of the road and those who might happen to be traveling at a pace slightly in excess of the designated speed limits and still without inconvenience or danger to the other occupants of the highway.

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The Need of Simplifying the Lubricating System. Simplicity and reliability are so closely interrelated that even to the veriest layman the presence of a number of small parts spells complication and a liability to derangement that diminishes in proportion as the parts subject to defection decrease. Not that all apparent complication is dangerous, particularly as such an opinion regarding a device may be the result of ignorance rather than otherwise. For that matter, all complication is not apparent by any means; it is frequently hidden under a severely simple exterior, and therein lies the danger. This is true of some lubricating systems, while others stand self-revealed. When it is borne in mind that lubrication constitutes the very life of the motor, the necessity for absolute reliability in this essential becomes evident. A failure of the ignition current or of the fuel carries its own warning; in the case of a shortage of lubrication it comes too late to avert the damage.

Despite the most painstaking care that can be exercised, foreign matter occasionally finds its way into the gasoline, and the same is true of the lubricating oil. Due to its far heavier consistency, it constitutes more of an obstacle to the flow of the latter than of the former, yet it is not difficult to find cars on the market to-day, the lubricating systems of which are characterized by a maze of fine bore tubes. In sharp contrast with these are those simple systems of pump circulation which insure a constant supply of oil to all the important bearings as long as there is any in the supply tank, and this with but a fraction of the parts necessary to accomplish it. Of course, there is something to be said on each side, but it would certainly seem as if the tendency to reduce this essential to its lowest terms, thus enhancing its reliability, constituted real progress.

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Interest in the Two-cycle Motor Abroad Active. Despite the advanced state of reliability and efficiency to which the four-cycle motor has been brought on the automobile, there appears to be no question that it is not generally regarded as representing finality of design in this direction. With its more or less numerous moving parts of small size and its inherent defect of producing but one power stroke in every alternate revolution, it goes without saying that, from an engineering point of view, the four-cycle motor presents ample room for improvement—an indictment that will not be denied even by its firmest upholders. The question has been one of method rather than doubt as to the necessity for betterment. It has long been recognized that the two-cycle principle offers the foundation upon which to build in this direction, but even the least enthusiastic supporter of its rival has not been convinced that sufficient progress has been made to warrant abandonment of the four-cycle.

What is needed is investigation and experiment; if half as many builders had been devoting their attention to the evolution of the two-cycle motor as has been the case with its competitor, it is safe to say that more would be known—the problem would be better outlined to-day than is at present the case. Though great success has attended the use of large stationary units of this type on the Continent, it has justly been considered a particularly sterile field for the two-cycle motor where the automobile is concerned, so that the announcement that the Automobile Club of France will institute a series of trials of two-cycle motors is somewhat of a surprise.

A. M. C. M. A. TACKLES SHOW SITUATION.

Despite the great amount of show talk that has been going the rounds ever since the close of last winter's season, the American Motor Car Manufacturers' Association has maintained a discreet silence regarding its plans in this direction, so that show business was the chief thing of importance before the regular quarterly meeting held last week in Detroit. The date for next fall's event is still held in abeyance, although it is generally thought that Horse Show week (November 16-23), which brings a representative gathering to New York, will be decided upon. As was the case last year, the show will be held in conjunction with the Automobile Club of America, and several makers who are not members of the association, but who will exhibit at the Grand Central Palace next fall, were invited to attend the meeting to discuss matters.

It is a matter of common knowledge that the old Grand Central Palace is soon to go down before the march of improvement in that section, so that the question of housing a show for 1908 was also taken up and an important proposal offered in connection therewith. This involves the erection of a show building further uptown—in Harlem, to be as definite as possible—and one that will be half again as large as the Garden. The American Motor Car Manufacturers' Association would have control over the building so far as automobile shows were concerned, and it is given as the opinion of the promoters of the scheme that such a structure would prove a success purely as a show building, owing to the fact that many organizations find it impossible to exhibit in New York owing to the exclusive contracts granted by the Garden.

Reports of trade statistics from various members of the association were read at the meeting, and revealed an increase of fully 25 per cent. in the registrations this year up to date, despite the adverse weather conditions, and it is confidently anticipated that sales will show an increase of 50 per cent. over those of last year. It is calculated that there are, at present, about 125,000 cars registered in the country, the reports revealing the fact that the demand for light cars selling at figures below $2,000 has largely increased, though the demand for heavier cars has not been affected. The increase in the demand for small cars is reflected by the fact brought out in the reports that New York's April registrations showed the Ford Motor Car Company to stand at the head of the list, with the Maxwell-Briscoe Motor Car Company second, and the Reo Motor Car Company, fourth.

Though testimony was being taken in Detroit in the suit against the Ford Motor Car Company while the meeting was in progress, Selden matters were not much discussed.

There was a record attendance at the meeting, the following concerns being represented: Thomas B. Jeffery Co., Kenosha, Wis.; Aerocar Co., Detroit; Maxwell-Briscoe Motor Co., Tarrytown, N. Y.; Motorcar Co., Detroit; Jackson Automobile Co., Jackson, Mich.; Ford Motor Co., Detroit; Premier Motor Mfg. Co., Indianapolis; Reo Motor Car Co., Lansing, Mich.; Welch Motor Car Co., Pontiac, Mich.; Austin Automobile Co., Grand Rapids, Mich.; St. Louis Car Co., St. Louis, Mo.; Rapid Motor Vehicle Co., Pontiac, Mich.; Wayne Automobile Co., Detroit; Dragon Automobile Co., Philadelphia; American Machine Mfg. Co., Detroit; National Motor Vehicle Co., Indianapolis; Mora Motor Car Co., Rochester N. Y.; Nordyke & Marmon Co., Indianapolis; Moline Automobile Co., Moline, Ill.; Mitchell Motor Car Co., Racine, Wis., and the DeLuxe Motor Car Co., Detroit.

ONLY FOUR COACHES FOR ANNUAL PARADE.

PHILADELPHIA, May 20.—President Edward Brinton Smith, of the local Four-in-Hand Club, blames the automobile for the rapid decline of his favorite sport. The annual parade of the club took Place May 11. In former years upwards of a score of big tally-hos were in line, with horns blowing and whips snapping. Saturday's affair, however, was quite dismal in contrast. Just exactly four coaches put in an appearance at the Bellevue-Stratford, the starting point.

TAXIMETER CABS COMING TO NEW YORK.

Three hundred automobile taximeter cabs, especially designed for this work and constructed in the new Darracq cab factory at Suresnes, near Paris, will be in service on the streets of New York City about the end of July, declares Walter Allen, of the Motor Carriage Company. A few weeks ago G. Winthrop Sands, president of the company, sailed for Europe, and has fixed upon the Darracq as the most suitable vehicle for service in this country. The chassis is a four-cylinder 15-horsepower model with shaft drive, simplified and rendered more accessible in view of the rougher service it will have to perform. A very neat type of landaulet body will be supplied by Védrine from the special body-building works at Rouen, France. It is the intention of the exploiting company to charge something like thirty cents a mile, or one dollar and a half an hour. Almost a thousand cabs of this description will ultimately be put into service in New York. Negotiations are on foot for establishing similar services in Boston, Washington and Chicago.

NEW JERSEY'S ELEVENTH HOUR AUTO BILL.

TRENTON, N. J., May 20.—Many automobilists are unaware that in the closing hours of the Legislature a bill was put through the House just before adjournment and during the usual confusion. The Associated Automobile Clubs of New Jersey will endeavor to convince Governor Stokes that the bill should not be signed. The measure provides that all police officers, constables, or other officials who do not see to the enforcement of the automobile law may be fined a sum not to exceed $200, or be peremptorily dismissed. Provision is made for twenty-five paid inspectors and a like number to serve without salary. The Commissioner of Motor Vehicles is given an increase of $1,500 in salary and also provided with a chief inspector at $1,500. Clauses regarding foreign autoists and drivers' certificates are also included, the tenor being to make the restrictions more severe. Those who have examined the measure contend that it is unconstitutional.

PENNSYLVANIA'S TWO BILLS ARE DEAD.

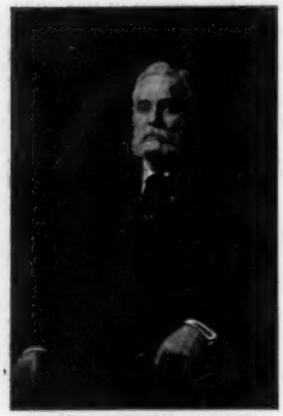
PITTSBURG, PA., May 20.—Owing to the unfortunate animosity of the Speaker of the Pennsylvania House of Representatives to the Senators who opposed one of his pet measures, sixty-eight Senate bills were practically killed in the House by the Speaker without any regard to their merit. Among them was the new Pennsylvania Motor Vehicle law, which granted reciprocal registration to automobilists registered in their home States. The Sproul State Highway bill, appropriating $1,000,000 for the improvement of the Philadelphia-Pittsburg road, was another commendable measure which was killed. Both of the bills had passed second reading and would have gone through without any opposition. Everything was done to secure a third reading for these bills, but it was impossible. Paul C. Wolff, secretary of the Pennsylvania Motor Federation, which is the State organization of the A. A. A., was unceasing in his efforts to get the measures passed.

SEC. BRITTON TAKES UP MISSOURI STATE WORK.

ST. LOUIS, MO., May 19.—Roy F. Britton, the veteran secretary of the St. Louis Automobile Club, has retired from that office, his new duties as secretary of the Missouri State Automobile Association requiring his entire time. He is succeeded by Samuel D. Capen, who was chosen at the recent annual meeting of the club as secretary and treasurer. All the other officers of the club were reelected: President, Alexander Euston; vice-president, Dr. E. M. Senseney; board of governors, Roy F. Britton, Alexander Euston, A. B. Lambert, H. S. Priest, Dr E. M. Senseney, and G. M. Wright. Secretary Capen, D. R. Calhoun, and J. A. Seddon were elected on the board to fill vacancies. The treasurer's report showed a comfortable balance in the club treasury.

STORY OF AN INDUSTRIAL ACHIEVEMENT.

From a start on a capital of $3,000, representing the savings from a soldier's pay, to the head of a corporation capitalized at $22,500,000 in less than 30 years, sounds far more like a fairy-tale than a record of actual fact. It briefly sums up in large measure the history of the bicycle and the automobile in this country as influenced by the career of Colonel Albert A. Pope, which is set forth in a very attractive volume entitled "An Industrial Achievement." Like most of the vast manufacturing interests for which this country is noted, the Pope business began in a very modest way. The start was made immediately after the Civil War at 87 Summer street, Boston, in a single room, up three flights of stairs. It was not until 1876 that the Pope Manufacturing Company came into existence, and its attention was then devoted to the handling of small patented devices, among which the most prominent was an air-pistol. In its desire to expand the company took up the bicycle, and it is interesting to note that the first machine built by Colonel Pope and his English friend, John Harrington, cost $313.



COL. ALBERT A. POPE.

At the very outset of its manufacturing career the company found that the patent situation was controlled by others; Richardson & McKee, of Boston, held one of those rare basic patents which make manufacturing without a license impossible, and excessive royalties threatened to end the existence of the business. In the final acquisition of this patent was laid the Pope policy, which has ever since been adhered to—that of fostering industry by issuing licenses to all reputable concerns who chose to engage in the same line, a right to manufacture even being granted to Cunningham, Heath & Co., old rivals of the Pope interests, and who, had they seen fit to take advantage of an offer of the patent when first presented to them, might have ended the latter's career. Not long after the acquisition of this first basic patent, the Pope company was assailed on all hands by people claiming to own patents essential to the manufacturing industry at that day and numerous actions were brought. Here again great foresight was shown by obtaining control of all patents that had a bearing on the bicycle industry. The judgment of the company in acquiring control of such patents was manifest in the fact that the litigation was always decided in its favor, while the wise policy followed on the whole patent question was strongly emphasized by the fact that after the expiration of a number of these patents, the price of the articles manufactured under them actually rose instead of falling off, as is usually the case.

But the growth and development of the Pope interests is a long story, only to be adequately told in a volume such as the one under review. The Pope Manufacturing Company increased its original capitalization of $100,000 to $1,000,000 within a few years. Its history since then has been one of upward leaps and bounds, but not like that of many another, merely the recital of increasing facilities to take care of increasing demands. It is far more than that, for the demand itself had to be created in the early days, and in doing so Colonel Pope benefited the country as a whole far more than he did his own company. The combination of such policies with that of judicious and widespread publicity has made the Pope name a byword the world over. The lead it assumed in the bicycle business made it thoroughly fitted to assume the same rôle in the case of the automobile, in which field its achievements are a matter of common knowledge. This unique publication is an 88-page quarto volume, executed by the Bartlett-Orr Press in a style that fits it to grace any library shelf.

ELEVEN HUNDRED MILES IN THE RAIN.

An eleven-hundred-mile automobile tour over a thousand kinds of roads, but during one continual kind of weather in the form of a spring rainstorm, was made last week by S. D. Waldon, sales manager of the Packard Motor Car Company in a 1908 Packard "30." The trip was a hastily conceived testing tour to try out the qualities of one of the four experimental Packards of the new model, and starting with a New York to Boston run, was continued back to New York by another road, and thence to Philadelphia and Pittsburg.

From New York, the run was made to Boston via New Haven and Hartford, the time from Hartford to Boston being 3 hours 35 minutes. After a rain-soaked day of demonstrating about the Hub, a party, including Alvan T. Fuller, of Boston, was made up for the return to the metropolis by the shore route through Providence. There was not an inch of dry road or a liter of dry weather as the car swept at a furious gait along the stone roads, blown by the Atlantic winds. Most of the way the going was firm, smooth and fast, but in sections the way was disputed by miles of loose boulders and ridges of native rock.

The next day, after luncheon in New York, a quick afternoon run down the famous New York-Philadelphia road was made, the highest speed reached on the good stretches being 68 miles an hour by the speedometer. That evening preparations were made for the mountain-climbing, valley-spanning chase to Pittsburg. The party for this last stage of the trip included Mr. Waldon, Mr. Fuller, Mr. Godshalk, of Philadelphia, and the latter's unknown friend, "Bill." Acting upon the counsel of Philadelphians who previously had made excursions into the fastnesses of Pennsylvania's tortuous mountain highways, a 5 o'clock start was made in the morning. The road taken was that leading through Columbia over the historical battlefield of Gettysburg and to Chambersburg, and thence directly across the many ridges of Allegheny mountains that corrugate the surface of Pennsylvania into rocky roads which sink to sea level only to rise successively to heights above the clouds. The storm had so deluged the countryside that hardy mountaineers of southern Pennsylvania, who had noted the characteristics of travel in all its many conditions, warned the tourists against proceeding, and predicted their failure to make the goal. All the time there was rain, and every mile was a rocky mile.

S. D. WALDON, WITH 1908 PACKARD "30," A VETERAN TRYER-OUT.

Incidents were frequent, but there were no accidents, and the progress, while rough and dangerous, was steady and sure. Three hundred and twelve miles to Greensburg were covered that day, and then a bursted tire caused a delay which brought on the growing blackness of night, and the trip was stopped until the next morning, when the run into the steel city was completed. While this ended one tour, it was only the beginning of the work that the car is now undergoing.

A RAMBLER'S 222-HOUR NON-STOP RECORD.

MINNEAPOLIS, MINN., May 20.—After running 222 hours, from 3 o'clock on the afternoon of May 10 to 9 o'clock Sunday night, May 19, and establishing a new record for a two-cylinder engine, the Model 21 Rambler, which was put under test by the Fawkes Automobile Company of Minneapolis and St. Paul, was brought to a stop at the Minneapolis garage before an interested crowd of spectators. The engine was apparently in excellent shape when it was brought to a stop Sunday night, after running over nine days continuously.

The performance of the Rambler was exceptional in the way of non-stop tests. It was on the road almost all of the time that the engine was running during the nine days, being driven through the night, in all kinds of weather. Only a small portion of the running was done under cover. Erne Simpson and Jesse Jennings were the drivers.

Severe snow storms, rain and sleet were encountered on several days. On the fifth day Jennings drove the car through a snow and sleet storm in the early morning, which forced him to stop twice to find his way. The engine suffered little, except that once or twice water collected on one of the spark plugs, and it was necessary to drain out water which had worked into the

RAMBLER NON-STOP CAR ENCOUNTERS SNOWSTORM, MAY 15.

Photo near Loring Park, Minneapolis. In the car are Erne Simpson at wheel; Jesse Jennings, assistant; E. G. Terwilleger, chief observer; L. H. Fawkes, proprietor Fawkes Auto Co., Minneapolis and St. Paul.

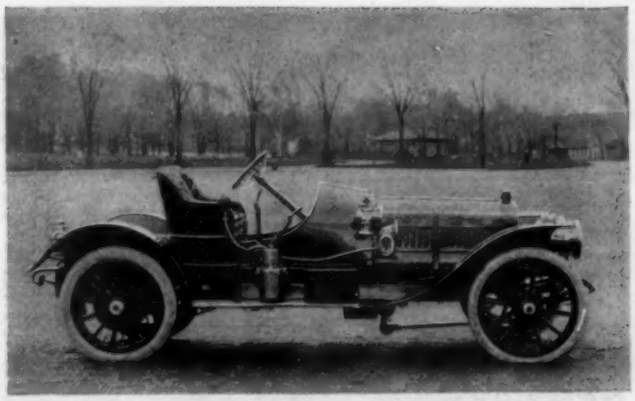
engine. A pounding in the cylinders became noticeable on the sixth day, giving evidence of carbon forming, but this disappeared when kerosene had been fed in through the carbureter. The engine continued to run smoothly, and oil used in unsparing quantities eased off every bearing and joint.

The engine consumed on an average of from 22 to 23 gallons of gasoline in the twenty-four hours. About ten round trips between the two cities were made each day, and in addition to this the work on city streets adds considerably to the mileage.

The car was under the eye of about fifteen observers, E. G. Terwilleger, president of the Reliance Elevator Company, and F. J. Kerner, manager of the Hartford Rubber branch, being among the chief observers. Storage batteries were changed twice, the connection being changed over to dry cells while the change was being made. No difficulty was experienced in making these changes.

GATES MILLS HILL CLIMB JUNE 8.

CLEVELAND, O., May 21.—Saturday, June 8, has been fixed as the date for the third annual hill climb of the Cleveland Automobile Club on Gates Mills Hill. Nineteen events are provided for, the entry fee per car being $10, which must be sent in not later than June 3. The F. B. Stearns Company, of Cleveland, has challenged all comers for the record of the hill.



THE THOMAS HIGH-POWERED RUNABOUT.

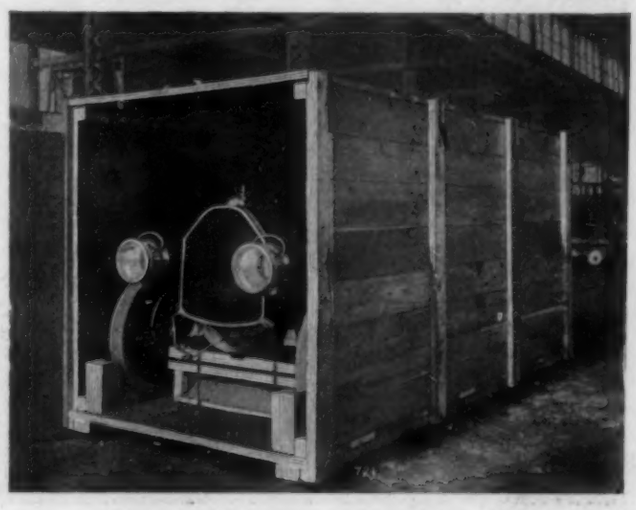
THOMAS PRESENTS POWERFUL RUNABOUT.

The new high-powered runabout by the E. R. Thomas Motor Company, of Buffalo, embodies the main features of design of that firm's touring cars, the differences being a special engine of high horsepower, set further back, the use of smaller wheels, a new design of frame and general fixture of pedals and levers.

The motor is of the four-cylinder water-cooled type, having five bearing crankshaft, the rear bearing being lubricated by a chain oiler. Lubrication of the motor is by a positive action pump with six sight feeds located in the dash. Four of the feeds lead to the cylinders, one to the shaft-driven fan and one to the crankcase. This oiler is operated by a shaft running from the rear end of the intake camshaft.

MARMON METHOD OF CRATING AUTOMOBILES.

As will be seen from illustration, the only criticism which might be brought against the manner in which Nordyke and Marmon crate automobiles, is that the work is too thoroughly done. The box is made to fit the car on sides and top, with just a little clearance at the ends. It is built up in sections with bottom spiked to two 4 by 6-inch skids, set in far enough to receive the weight of the car. The box is lined with tarred paper and is practically airtight and moisture-proof. The machine is so placed in the box that there is no side motion; a chock block is placed forward and back of each wheel; the axles are blocked up so that the weight is removed from the tires, and blocks are placed between the elliptic springs. Lamps, etc., are left attached to the car; spare parts are boxed, and extra tires, top, trunk rack, etc., are secured to the floor under the car.



HOW THE MARMONS ARE SECURELY CRATED.

MARK TWAIN ENJOYING A DRAGON RIDE IN CENTRAL PARK.

POPE-HARTFORD WINS FIRST MEXICAN RACE.

Mexico has entered the field of automobile road racing, and in the initial event held in the Spanish-speaking republic American cars carried off all the honors. The race was held at Guadalajara over a 22-mile circuit around which five laps were made. The prize, known as the Jalisco Cup, was won by J. L. Lawrence, driving a 30-horsepower Pope-Hartford stripped touring car, which did the distance in 3:13:44 9-10, or a little better than a kilometer in 1:9 for the whole race. A Packard 30 was the only other car to finish; it was driven by Berrito, an Italian, and its time was 3:53:9, the second prize being a gold medal. The course was patrolled by troops throughout its entire length and the grandstand was so situated that a view of the cars was afforded for some distance each way. A crowd of 2,000 people filled the stand while hundreds of others lined the course. Though termed a long-distance road race, the event was really a series of races, each lap counting independently, time being totalled at the end.

SPRING CROP OF BOSTON TRADE CHANGES.

BOSTON, May 20.—The annual spring crop of changes in the local automobile trade has appeared and within the past few days several important changes, more or less in the nature of surprises, have been announced. A shift that was a genuine surprise was the resignation of C. A. Gilmore as manager of the New England branch of Thomas B. Jeffery & Co. Mr. Gilmore leaves the Rambler, June 1, to join the ranks of the Licensed Association, taking a position as Knox traveling representative.

Another notable recent change is at the Dragon Automobile Company branch. Some weeks ago the retirement of Frank S. Corlew as vice-president and sales manager, was made public. This week there was still another change. Manager Daniels, of the Boston branch, was called to the factory at Philadelphia, and G. C. Lewis, recently with the A. L. Kull Automobile Company, of New York, was appointed manager.

At the Studebaker agency, the Prentiss Motor Car and Supply Company, H. C. Prentiss, president and manager, has resigned, and the agency is in charge of R. W. Daniels, treasurer and acting manager. Another branch to undergo a change in personnel is the Stevens-Duryea. Since the death of Frederick E. Randall during the Boston show, his widow has conducted the agency with Simeon H. Baker as manager. Now, Mr. Baker has left, and a change in the Stevens-Duryea representation in this city is rumored.

With the financial troubles that have overtaken the Napier company there have come some shifts. Philip French, who was the Napier sales manager, has gone with the French Carriage Company, which handles the Bayard-Clément and the Bailey electric.

BALTIMORE INVESTS IN MOTOR PATROL WAGON.

BALTIMORE, May 20.—The Board of Police Commissioners have purchased a motor patrol wagon, electrically driven, to be used in the place of the horse-drawn patrol wagon. If it proves a success in operation, vehicles of a similar style will be used all over the city.

AT THE BUSY MANUFACTURING PLANT OF THE CORBIN MOTOR VEHICLE COMPANY, NEW BRITAIN, CONN.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Col. Jacob Ruppert, of New York City, has just added another 40-horsepower Martini touring car, making the third of this make in his garage.

An immense photogravure view of the Winton factory, which stretches along the Lake Shore Railroad in West Cleveland for a distance of 500 yards, has been produced for the Winton Motor Carriage Company.

In the recent Targa Florio, held over the mountainous Sicilian circuit, the first five machines were lubricated with Vacuum Mobiloils. The machines were Fiat (Nazzaro), Fiat (Lancia), Itala (Cagno), Lorraine-Dietrich (Duray), Itala (Fabry).

The Brandywine Electric and General Repair Company of Wilmington, Del., has decided to use a commercial vehicle hereafter in making its deliveries. The firm has purchased a machine, which it will rebuild at its own works to meet its special needs. The firm has been using wagons for making deliveries.

The American Lamp Company, Detroit, Mich., is now settled in its new factory, corner Beaubien and Monroe streets, and additional equipment is being put in to make a full line of oil lamps in addition to gas lamps. The capital of the company was recently increased to $50,000. David L. Conklin is president and manager and R. D. Maher is sales manager.

The National Carbon Company, Cleveland, O., has placed on the market a specially designed battery styled Columbia ignitor Red Top dry cell. This battery has been tested under severe conditions and it is claimed that it has never failed to meet the demands made upon it. They are made in the following sizes: 3 1-2 by 8, 3 by 7, and 2 1-2 by 6 inches.

Winton branches in Pittsburg and Detroit have been removed from temporary to permanent quarters. In Pittsburg the branch occupies a spacious and splendidly equipped building at Baum and Beatty streets, erected by the Winton Company for its exclusive use, while the Detroit branch is well housed at 738-740 Woodward avenue, in the city's best residence district.

The Babcock Electric Carriage Company of Buffalo finds its shipping department overcrowded because of the inability on the part of the railroads to furnish cars. The company on May 16 had a two-carload shipment of automobiles ready for Washington, D. C., but the railroad could not furnish the cars. Rush shipments to other points had to be made by express.

The dynamo-dynamometers for testing automobile engines which have been supplied by Joseph Tracy to a number of the leading builders will in future be marketed by the Sprague Electric Company under an arrangement by which Mr. Tracy will supervise the construction of the apparatus, which will be manufactured at the Sprague Electric Company's works, New York City.

The Jamestown Motor Parts Company has been incorporated for $125,000 to manufacture automobile parts. Directors are Scott H. Penfield, E. D. Cook, Andrew Davis, Erwin Shearman and C. A. Pickard. The new company, which is an offshoot of the Salisbury Automobile Wheel Company, will erect a large factory at East Jamestown, N. Y., and will ultimately manufacture commercial vehicles.

Automobile owners have noticed at times when they are out on the road that the engine will occasionally misfire on one cylinder. The trouble can at times be traced to a defective coil, or more strictly speaking to a defective unit of a coil. The trouble can be located usually, says Mr. Maxwell, of the Maxwell Briscoe Motor Company, by changing the units around. If the unit is then at fault the miss will manifest itself in another cylinder.

No automobile in use received such hard service as the American Mercedes used by Fire Chief Croker in New York. The equipment of that car with Truffault-Hartford suspensions and the good service they rendered resulted in additional city cars going to the Hartford Suspension Company to receive shock absorbers. They were the Locomobile of Fire Commissioner Weiss in Brooklyn and the automobile of Deputy Chief Lally.

The Gemmer Manufacturing Company, Detroit, Mich., has been incorporated under the Michigan laws with a capital of $200,000 and has secured a factory at Merrick avenue near Grand River avenue. This company will take over the business of the Gemmer Engine Company, Wabash, Ind., which is being moved to Detroit and will manufacture the Gemmer steering gear in three styles and also other automobile specialties. Officers of the company are: President, E. A. Skal; vice-president, George A. Gemmer; secretary, E. P. Hammond.

It would seem as if all high-water marks in the shape of tire records had been surpassed, for as the result of the recent discussion of tire mileage the Diamond Rubber Company has received a letter from Disbrow Brothers, Jamaica, Long Island, stating that a Diamond tire on one of their cars has made the astounding figure of 31,000 miles as recorded by an odometer, without other repairs than those made by the users. Another tire on the same car has made the same mileage, but has been retreaded once by the makers. This tremendous mileage has all been piled up in the course of a year and a half.

As a result of the recent trip to the Jamestown Exposition by R. H. Johnston of the White Company, who is one of the most energetic pathfinders in the country, the Pennsylvania Railroad has granted a substantial reduction in the freight rate for carrying automobiles across Chesapeake Bay from Cape Charles to Old Point Comfort and Norfolk. The former rate was $17.60 and the new rate is $6 for a touring car and $4 for a single-seat runabout not exceeding 800 pounds in weight. The short route to Jamestown via Philadelphia, Dover and Cape Charles is certain to be much used by those visiting the Exposition.

Canada is to have another automobile factory in the near future, but instead of being an independent enterprise it will represent an offshoot on the part of the McLaughlin Carriage Company Ltd., of Oshawa, Ont. This firm is now having constructed a three-story building measuring 70 by 130 feet and have placed orders for the necessary machinery some time since. Designs have been in preparation at the same time and as soon as the machinery is installed, which is expected to be by July, work will be begun so that the cars may be thoroughly tested out this summer. Just what types the company will specialize on they are not prepared to state at present. They hope to be in the market for 1908.

NEW AGENCIES ESTABLISHED.

Chadwick cars will be handled in Boston hereafter by the Curtis-Hawkins Company, who are located in the Motor Mart, Park Square.

During the past week the Logan Construction Company of Chillicothe, O., has established the following agencies: Essex Automobile Company, Newark, N. J.; South Broad Automobile Company, Philadelphia; Commercial Auto and Supply Company, Washington, D. C.; F. M. DeRivas, City of Mexico; Wichita Auto Company, Wichita, Kans.

HE WILL SELL THE THOMAS.

Mason B. Hatch, the recently appointed general sales manager of the E. R. Thomas Motor Company, of Buffalo, N. Y., has won his position through diligence and a steady application to duty. He has been connected with the Thomas interests for a long time and his steady service and experience have fitted him peculiarly for the representative position to which he has been named. The rapidly increasing business of the Thomas factory presents an excellent opportunity for an enterprising man of Mr. Hatch's type and personality.

MASON B. HATCH.

PERSONAL TRADE MENTION.

E. H. Broadwell, who has charge of the Detroit interests of the Fisk Rubber Company, is out again after a prolonged illness.

Charles D. Smith, formerly Winton supervisor in the East, is now in general charge of the factory parts department at Cleveland.

M. C. Warwick has been added to the traveling force of the H. H. Franklin Manufacturing Company. His first trip will take him through the Middle West.

F. A. Babcock, president of the Babcock Electric Carriage Company of Buffalo, accompanied by Mrs. Babcock, started on a two weeks' trip through the South last Thursday.

Harold L. Pope, second son of Colonel Albert A. Pope, of bicycle and automobile fame, has recently been appointed assistant manager of the Pope Motor

Car Company, Toledo, O., succeeding H. S. Leyman, resigned.

R. D. Aldrich has been appointed general sales manager of the Atwood Manufacturing Company, Amesbury, Mass. Mr. Aldrich was formerly connected with the Twentieth Century Company.

George E. Edmunds, of Edmunds & Jones Manufacturing Company, Detroit, Mich., has just returned from a two months trip to the Pacific Coast. Mr. Edmunds states he found trade conditions excellent and promising.

Harry Leyman, formerly assistant manager of the Pope Motor Car Company, Toledo, O., has been appointed sales manager of the DeLuxe Motor Car Company, of Detroit. Mr. Leyman entered upon his new duties the latter part of last week.

Robert M. Beck, long connected with the Pope Manufacturing Company as chief engineer, has gone to Hagerstown, Md., where the Pope-Tribune is manufactured, and also the Pope bicycles, the sale of which is greater than for several years.

P. L. Hussey has resigned from the Cambria Forge Company, Johnstown, Pa., and at present is located at 1115 St. Clair avenue, Cleveland. Mr. Hussey is one of the best known men in the industry, and after taking a short rest will likely connect himself with the trade again.

C. S. Carris, who with L. L. Whitman has twice broken the transcontinental record in a Franklin car, has just returned to Syracuse after completing a trip of upwards of 10,000 miles in a 1907 Franklin six-cylinder car. On this trip Mr. Carris has visited nearly all of the principal cities east of Chicago.

Owing to the promotion of H. E. Field to the position of sales manager of the Hartford Rubber Works Company, the position of branch manager at Detroit was left vacant, and C. W. Hatch, formerly with the Diamond Chain and Manufacturing Company, has been appointed to the position of local manager in that city.

C. C. Goodrich, general superintendent of the B. F. Goodrich Company, Akron, O., has announced that he will retire from the company about the first of next year and will remove East, probably to Orange, N. J. He has no plans for the future, but it is understood he will retire from active business. The death of his mother, the widow of the late Dr B. F. Goodrich, founder of the rubber industry of Akron, through which Mr Goodrich comes into a fortune of a million or more, is the cause of his severance from the company. His resignation follows that of J. F. Kelley from the same company, he, like Mr. Kelley, to enjoy their fortunes rather than keep closely confined to business.

NEW TRADE PUBLICATIONS.

A neat folder has just been issued by the Peerless Motor Car Company, with eight finely engraved plates of Model 15, 45-horsepower, and Model 16, 30-horsepower, 1907 Peerless cars. These represent the eight principal types of modern automobiles, the four and seven-passenger touring car, the racy roadster, limousine, coupé, cape-top roadster, berline and demi-limousine and hansom.

A catalogue is just off the press dealing with Hill precision oilers for automobiles, motor boats and other machinery. Half-tones of the complete oilers and sectional line drawings of the mechanism are features of the booklet. Hill precision oilers are manufactured by the Precision Appliance Company, 832-840 Austin avenue, Chicago.

A very complete catalogue of more than ordinary elegance and care in get up has been sent forth by the Stewart & Clark Manufacturing Company, of Chicago, descriptive of the 1908 model of the Stewart speedometer. Numerous half-tones illustrate the complete indicator and its various component parts. A copy of the booklet will be forwarded to any address upon request.

Charles E. Miller, 97-101 Reade street, New York, has produced his 1907 catalogue of parts, fittings and sundries for automobiles, motor boats and motorcycles. As usual it is a voluminous affair of more than 200 pages, comprising every known article in the automobile industry. An edition of sixty thousand has been printed, and a copy can be obtained free on request by any automobilist.

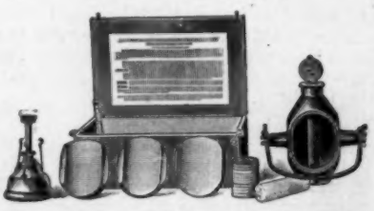
INFORMATION FOR AUTO USERS

Hopewell Tire Case.—This case is a continuous casing wrapping round the tire to protect it from water, dust and grease. The case is made of the highest grades of both enameled drill and artificial leather, fastened at one end with a metallic cable and at the other with a cord, which are tightened and fastened, as shown in illustration. The metallic cable is covered by a braid and treated with a moisture-proof compound. Inasmuch as the inner diameter of the tire case does not have to pass over the outside diameter of the tire, the inner portion of the tire case is made a perfect fit and has not the customary wrinkled appearance. Hopewell Brothers, 42 Osborne street, Cambridge, Mass., are the manufacturers of the tire cases.

THE HOPEWELL TIRE CASE.

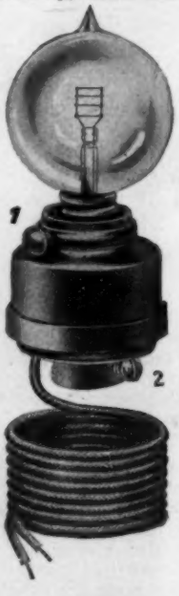
The Latest Winchester.—A speedodometer with the high-speed-record-hand is the latest product of the Winchester Speedodometer Company, 1557 Broadway, New York. The auxiliary, or maximum hand, red in color, is carried by the regular indicating hand to the highest speed attained by the car and remains there when the car slows down or stops. A touch of the resetting button, which, incidentally, is within easy reach of the chauffeur's foot, releases the maximum hand, which instantly falls back to the speed the car is then making and remains there when the car stops. The advantage to the autoist who has been summoned by the constable to stop is obvious. There is no advance in the price of the new models incorporating this device.

The Little Wonder Vulcanizer.—Louis E. Rice, Cedar Falls, Ia., is the patentee and manufacturer of a handy portable vulcanizer which it is claimed is the only one in existence, apart from factory plants, having detachable plates which will vulcanize tires on or off the rim and leave the tire the proper shape after the repair is made. The Little Wonder Vulcanizer weighs only 3 1-2 pounds and occupies so little room that it is very easily carried on any automobile. By its use the repair of a bad cut on an outer case or an inner tube can be made in about thirty minutes.



RICE'S LITTLE WONDER VULCANIZER.

Electric Auto Lamp.—An ingenious electrical device has been placed on the market by the Royal Battery Company, of New York, consisting of a novel form of an electric lamp and an attachment which fits the gas pipes of the standard headlights and gas lamps having a 3-8-inch pipe. A number of filaments burn in a parallel simultaneously, each filament giving about four candle-power on six volts. If one filament should burn out or break, three would be left to give service. The socket or attachment also presents a new feature. It has a set screw at the upper part which tightens the bulb and makes unscrewing, owing to vibration, an impossibility. The lamp itself is fed from the ignition storage battery or dynamo. Specially treated filaments are used, and it is claimed that the lamp will last for 250 to 300 hours before it will burn out. No tools other than a screwdriver are needed for installing the apparatus; two lamps can be put in position in three minutes. A further advantage of the system is that the attachment is interchangeable with the gas system. The National Sales Corporation of 296 Broadway, New York, is selling agent for the apparatus.



ROYAL MULTIPLEX LAMP.